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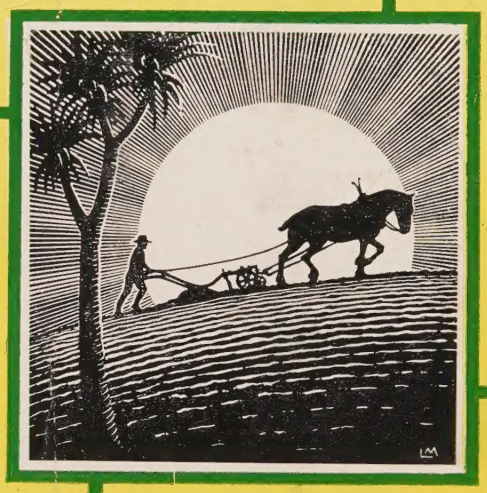

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The New Zealand Journal of Agriculture

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Analysis of Cheap Seed

Farm Lands Detrimentally Affected By Deceptive Trading

NELSON R. FOY, Officer-in-Charge, Seed-Testing Station, Palmerston North.

DURING the past two years, when prices for standard grades of grass and clover seed have been relatively high, the sale of cheap, low-grade seed has assumed alarming proportions in the North Island, notably in the North Auckland, Waikato, and Bay of Plenty districts.

The greater proportion of this trade is conducted per medium of Press advertisements, followed up with the very attractively worded descriptive folders forwarded to all inquirers. It is significant that the bulk of the advertised business is conducted from centres outside of the main distributing districts, which fact permits the cheap trade to operate without having to build up the good-will and reputation so essential to the established seed house.

The analyses of the mixtures offered show that they are composed of low germinating lines and residue from the dressing plants mixed in any proportion. They are offered at prices below ruling rates but, nevertheless, profitable to the dealer.

The growth of the cheap seed trade has grown to such proportions that it is having a detrimental effect on the grasslands of the Dominion, and if this trade continues at its present rate it may be reflected in production figures of the Dominion's main exportable commodities.

In addition to this type of trade, it is intended to touch on several aspects of the retail seed trade which are not necessarily confined to the cheap trader, and which, to an independent observer, savour of sharp practice at the expense of the probably less well informed farmer buyer.

Deception in the retail seed trade may be divided into three main classes.

Deceptive Inference

1. *The sale of Government certified seed, either by statement or inference that it is officially approved in quality in all respects.*

This is a pernicious and deceptive trade, in that full advantage is taken of the merits of official certification and certified products to support the sale of (a) machine-dressed, low germinating lines, priced well below ruling market rates; or (b) farmers' dressed lines, officially sealed in the paddock prior to dressing.

With regard to the first point, it should be understood by all buyers of certified seed that seed certification was established primarily to enable seed of approved strain or type to be

handled commercially under seal. The system provides also for machine-dressing of all lines approved on field crop inspection, and requires that all machine-dressed seed conform to a specified standard of analytical purity.

Thus, buyers of machine-dressed certified seed receive full protection in respect of strain and seed purity, but certification carries no warranty in respect of germination. For various reasons the germination capacity may be well below that regarded as standard for the particular seed.

Range of Germination

Certified perennial ryegrass may be purchased in New Zealand with germination percentages ranging from less than 10 per cent. up to 90 per cent. or better, which means that the cash value of perennial ryegrass may range from 2/- to 20/- per bushel. The farmer who pays 10/- per bushel for seed germinating 30 per cent. when his local vender asks 20/- for 90 per cent. seed is paying at the rate of 30/- per bushel, which represents an excess of 10/- per bushel for nothing more than the satisfaction of having made a "bargain."

A sowing of the dearer seed at half rates would have cost the same as the cheap one and provided a heavier sowing of germinable seed. After all, only the living seed will produce plants, and the quantity of this living seed in a line determines the commercial and sowing value. The purchase of seed at any price, high or low, without some knowledge of its capacity to grow and produce plants of the desired type, is nothing less than sheer folly.

The retail trade in farmers' dressed certified seed is assuming alarming proportions, especially in the Hawke's Bay and Poverty Bay districts. It is unfortunate that the system of official preliminary paddock sealing of undressed seed, designed to prevent interference with the produce of a recorded and approved area prior to machine-dressing, is used to retail as "Government Certified," seed, which in very many cases, is unfit for sowing. In short, the unfinished article never intended for retail distribution, is offered and sold in competition with completed, fully machined seed, to the disadvantage of the legitimate trader.

Admittedly, some undressed lines are reasonably clean and well priced, but, in general, undressed seed, particularly that from East Coast, North Island districts, contains a relatively high amount of impurity, which, in the normal course of events, is removed by machine cleaning. If, however, the estimated dressing loss is high, the disposal of the line through retail channels becomes a more profitable proposition. It is true that there is a demand from farmers for this lower priced seed, but notwithstanding the added costs of dressing, machine-cleaned seed is invariably a more economical proposition in terms of "pure ryegrass."

What Buyers Receive

Buyers of farmers' dressed seed pay for and sow prodigious quantities of the weed seed and useless inert material normally removed in machine cleaning.

The retailing of farmers' dressed certified seed is by no means confined to the cheap trader, and it is becoming so extensive that in order to com-

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All lines are tested for Strain, Purity and Germination in both our own Seed Testing Laboratory and also at the Government Station, Palmerston North.

At the last Otago Winter Show we secured 32 Firsts and 6 Seconds out of 38 Entries.

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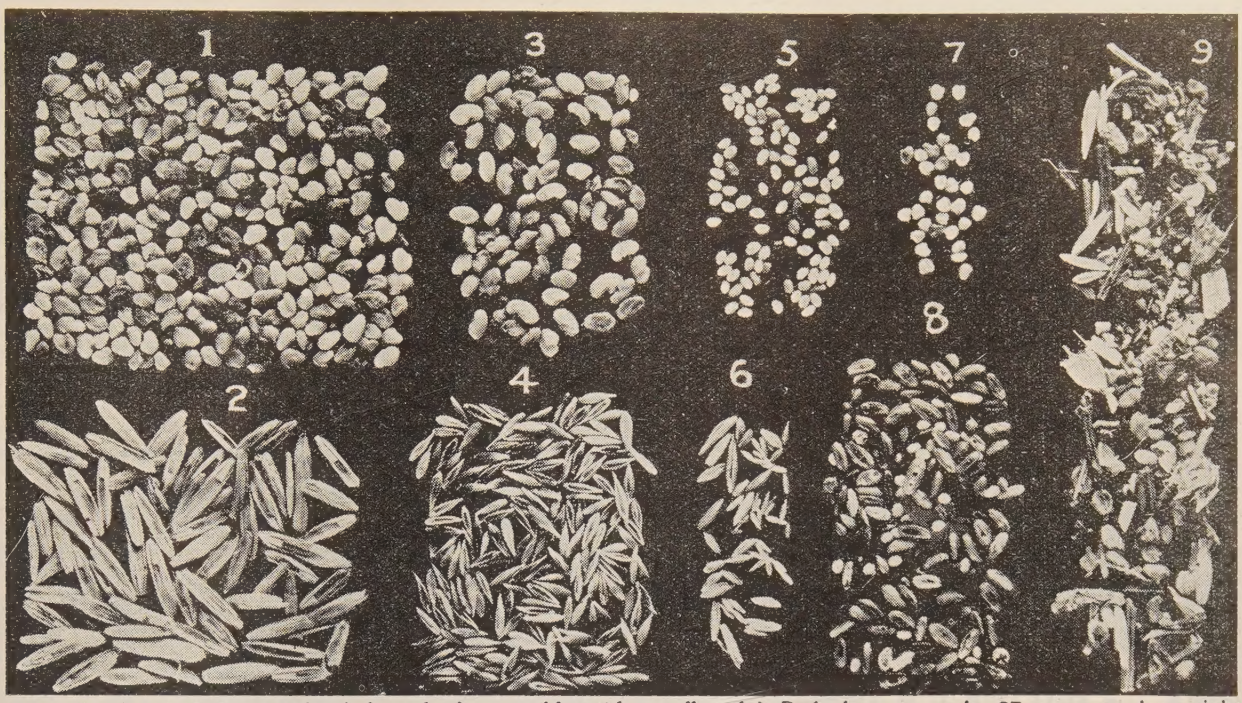

A sample of typical cheap and unbalanced mixture sold at 5d. per lb. (1) Red clover seconds, 27 per cent. by weight, germination 62 per cent. (2) Ryegrass annual type, 23 per cent. by weight, germination 38 per cent. (3) Lucerne seconds, 11 per cent. by weight, germination 43 per cent. (4) Crested dogstail, 9 per cent. by weight, germination 18 per cent. (5) Suckling clover, 3 per cent. by weight. (6) Fog, cocksfoot, and browntop, 1 per cent. by weight. (7) White clover, 3 per cent. by weight. (8) Weed seeds, 12 per cent. by weight. (9) Chaff, dirt, broken seeds, etc., 11 per cent. by weight.

pete on a price basis, more and more retailers are being forced into it.

Any seed merchant worthy of the name, values, buys, and sells seed, on a basis of test, and will willingly supply to any purchaser test particulars covering the purity and germination of seed offered, which particulars can be checked without charge at the Official Seed-Testing Station, Palmerston North.

To sum up, the fact that seed is certified indicates official approval of plant type or strain, and when machine-dressed, that the line has conformed to a certain standard of purity, but **has entirely no reference to germination.**

Harm to Grasslands

2. *The sale of cheap seed mixtures under various trade descriptions supported by ingenious reasons for the vendor's ability to offer superior quality at extraordinarily low prices.*

This is a very active trade, and one which is doing incalculable harm to grassland in certain districts.

From a study of the analyses of a wide range of samples of cheap mixtures supplied, it is evident that they consist for the most part of low germinating ryegrass of inferior strain plus seconds or whatever old and worthless seed can be obtained, with a fair proportion of fog and suckling clover.

All the mixtures are unbalanced and quite unsuitable for pasture sowings. Waikato areas as sown during the past two years with cheap mixtures have recently been inspected, and the impression of their condition today may be summed up in the words of the observers "absolutely appalling."

HESKETT SLAG

THE ONLY NON-ACID MANURE CONTAINING COBALT.

FEED the disease-resisting minerals—Cobalt, Phosphoric Acid, Iodine, Calcium, Magnesium, Silicon, Iron, and other minerals all present in HESKETT SLAG — in Nature's way — through grass and crops to make better pasture, hay and ensilage.

Watch your stock for Nature's advice. It's easily judged if you leave the gate open into a paddock dressed with HESKETT SLAG. They'll show you which they prefer!

Hundreds of satisfied farmers have proved the value to Pastures and Stock (rendering them more strongly disease-resisting) by using HESKETT SLAG. Send for detailed literature.

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(The Proven Seed Disinfectant)

APPROVED by the Department of Agriculture.

AGROSAN · G has been proved by the New Zealand Plant Research Station to be outstandingly efficient as a seed disinfectant for dusting agricultural seeds, such as wheat, oats, barley, and peas. AGROSAN · G completely controls the widest possible range of seed-borne diseases, and gives quicker and more uniform field germination.

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Harvest with Satisfaction!

N.B.—The grade of AGROSAN · G now being supplied to New Zealand users is similar in every respect to that referred to in official reports as "AGROSAN · G IMPROVED."

Use AGROSAN · G with Wheat, Oats, Barley, Peas, and all other seeds

Purchase Your Supplies NOW from

YOUR STOCK AND STATION AGENT, SEED MERCHANT, OR SEED CLEANER

or
- F. COOPERS, LTD., WELLINGTON.
- MESSRS. DALGETY & CO., LTD.
- MESSRS. N.Z. LOAN & MERCANTILE AGENCY CO., LTD.
- MESSRS. WRIGHT, STEPHENSON & CO., LTD.

AGROSAN · G is a product of

IMPERIAL CHEMICAL INDUSTRIES LTD.

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Further information can be supplied on application to Box 900, Auckland.

No Redress

Purchasers and prospective purchasers of this class of seed should realise that notwithstanding vendors' guarantees, they have no redress. The printed guarantee covers a warranty by inference, but not by statement, but with the average farmer it is a successful selling technique.

The following are analyses of typical cheap seed mixtures obtained from two vendors who widely advertise their mixtures:—

Advertised at 4d. per lb.

Seed.	Per Cent. by weight in mix.	Germination Percentage.	Approx. weight of living seed per 100 lb. of mix.	Approx. germination percentage of standard quality seed.
Ryegrass: (annual type)	47.0	19	9 lb.	90
Red clover	18.1	40	7 lb.	95
Crested dogstail	8.4	10	¾ lb.	95
White clover	6.2	15	1 lb.	95
Fog	5.2	77	4 lb.	90
Cocksfoot	3.2	20	½ lb.	90
Chewings fescue	2.4	2	⅛ lb.	90
Timothy	2.3	—	—	95
Suckling clover	1.9	20	½ lb.	90
Weeds	2.4			
Chaff, etc.	2.9		Total: 23¼ lb.	

The duplication of this mixture, in high grade lines, priced at present equivalent proportions of living seed, ruling prices:—

Seed.	Purity percentage.	Germination Percentage	Cost.	
Per ryegrass, certified P.P.	99	95	9 lb. @ 1/- lb.	9/-
Red clover, N.Z.	99	95	7 lb. @ 1/- lb.	7/-
Crested dogstail	99	95	¾ lb. @ 2/- lb.	1/6
White clover, certified P.P.	98	95	1 lb. @ 2/6 lb.	2/6
Fog	95	90	4 lb. @ 6d. lb.	2/-
Cocksfoot, certified mother	80	90	½ lb. @ 1/6 lb.	9d.
Chewings, fescue	98	95	⅛ lb. @ 2/6 lb.	1/3
Suckling clover	95	90	½ lb. @ 6d. lb.	3d.
			Tl. weight: 23¼ lb.	Tl. cost: 24/3

SUMMARY:

100lb of cheap mixture costs £1 13s 4d.

100lb of cheap mixture contains: 23¼lb of living seed.

23¼lb first grade seed costs: £1 4s 3d.

23¼lb first grade seed contains: approximately 20lb of living seed.

Cost per lb of living seed in cheap mixture: 1s 6d.

Cost per lb of living seed in first grade: 1s 2½d.

SOW COOPER'S SEEDS
THE SEEDS OF SUCCESS

1860 to 1939

Only seeds of the Highest Quality and Strongest Germination can be depended on to give complete satisfaction in your nursery, garden, or on your farm.

COOPER'S "SEEDS OF SUCCESS"

have stood the test of time, as evidenced by the outstanding results obtained by practical men.

F. COOPER LTD. 109-115 Dixon Street, Wellington, C.1., N.Z.

Wholesale Seed Merchants and Seed Growers

Advertised at 5d. lb.

Seed.	per cent by weight in mix.	Germination percentage.	Approx. weight living seed per 100 lb. mix.
Ryegrass	36.5	29	11 lb.
Suckling clover	20.0	50	10 lb.
White clover	8.9	42	4 lb.
Crested dogstail	2.8	7	1 oz.
Chewings fescue	2.8	1	1 oz.
Red clover	1.1	2	1 oz.
Cocksfoot	0.7	15	1 oz.
Fog, Timothy, Poa sp.	1.3		Total: 25¼ lb.
Weeds	15.1 (includes 10% cluster clover).		
Chaff, etc.	10.9		

SUMMARY:

100lb of cheap mixture costs: £2 1s 8d.

100lb of cheap mixture contains: approximately 25¼lb of living seed.

25¼lb first grade seed costs: £1 6s 5d.

25¼lb first grade seed contains: approximately 21lb of living seed.

Cost per lb of living seed in cheap mixture: 1s 7d lb.

Cost per lb of living seed in first grade seed: 1s 3d lb.

Another mixture from the same distributor contained ingredients similar to the above, but included 12 per cent. by weight weed seeds, comprising twenty-one different species, of which the common field buttercup was present at the rate of 3000 seeds per ounce. For the sum of 3½d per lb any farmer could purchase this collection, and by sowing at the rate of 30lb to the acre, distribute over 1lb of buttercup seed per acre.

False Economy

Low quality from this and similar distributors is not confined to mixtures. For instance, a financially impoverished golf club attempted to sow its greens in chewing fescue at 1s 4d per lb when first grade cost 2s 4d per lb. The cheap seed germinated 4 per cent. (standard first grade 90 per cent.). which low test was the precise reason why that particular seed was being handled by the cheap seed dealer.

During the past few months numbers of samples of these cheap mixtures have been forwarded for analysis and comment, and, with some variation in the quantities of each constituent, all are typified by the above samples. The reason for low price is obvious—low quality, especially in respect of germination. After all, when ruling prices are approximately indicated in the second table above, how could anyone, even with the most advantageous buying and marketing facilities, sell similar quality at 4d, 5d, or even 1s per lb, and make a profit?

"Bush Mixtures"

Under the term "bush sowings" or "bush mixtures" hundreds of sacks of screenings and old low-germinating seeds are distributed in New Zealand every year. Admittedly, there

In view of the fact that there is no Pure Seeds Act in New Zealand, the Department intends to publish from time to time analyses of seed mixtures on the market, giving the name of the vendor and the true value of the mixture.

is a demand for cheap seed for scrub country and similar sowings, and which any retailer will blend to a stipulated price, with, in some instances, test particulars. In a great number of cases, bush mixtures are stocked ready mixed and are offered to bargain hunters as good quality seed, but "just a little rough." On occasion this is an apt description, but more often than not the roughness covers the presence of old, worthless, or weed infested seed, for which fivepence per lb is just fivepence too much.

It is conceded that seed other than what may be regarded as first grade, mainly in respect of germination has to be disposed of, and there can be no reasonable objection to the retailing of, say, certified ryegrass of low germination, in mixtures or otherwise, **provided always** that the percentage of germination is known to the buyer and that the seed is priced according to its plant producing capacity.

Likewise, bush burn mixtures have a place in the seed trade, provided also that the buyer is aware of the nature of the constituents and their approximate value. Too often is the bush burn mixture regarded as the refuse bin of the seed store—to be offered as a mixture "with some quite good stuff in it."

Advice to Buyers

If seed buyers will accept advice, they will on no account purchase seed ready mixed, irrespective of description and price.

3. *Substitution of first-grade seed with inferior seed of similar appearance: non-inclusion in mixtures of seed as specified by the buyer:*

These practices are hard to detect, but they appear to be not uncommon, especially with the less specialised small merchant. The most common forms of substitution are: (a) the supply of uncertified seed for all or part of a certified order; (b) the adulteration of white clover with suckling clover, and/or cluster clover, or the complete substitution of white clover by cluster clover, a seed very similar to white clover, and which by the uninitiated could easily be accepted as white clover. The writer was surprised recently to see that the "white clover" in one of the mixes sent out by a merchant who values his reputa-

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OFFICIAL AGENTS N.Z. DAIRY PRODUCE
Frozen Meat Importers
Old established and independent British House specialising in N.Z. and Empire produce, invites Farmers killing and exporting on own account, to consign their shipments to our care for individual attention and to ensure best returns.
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tion consisted entirely of cluster clover.

In fairness to the trade as a whole, however, it must be pointed out that, in the main, New Zealand seed merchants are jealous of their reputation as suppliers of good seeds, and the Department is satisfied that the majority of merchants consistently sell seed which can be relied upon.

The omission or reduction of high priced small seeds in prepared specified mixtures is by no means a new idea, and analyses of samples received here recently indicate that the sale of inferior seed is not the only misrepresentation associated with times of high seed prices.

In one mix prepared in a small North Island town the buyer was quite satisfied with the mix, except that he could not recognise any Lotus major (ordered and paid for), which was quite understandable, because there was none. He also asked whether the black seeds were first grade subterranean clover, which had been ordered and paid for. These seeds were not subterranean clover, but turnip seeds. Subsequent investigations revealed that whereas the order specified certified ryegrass and white clover, uncertified had been supplied, and that Lotus major and subterranean clover had been omitted altogether, but all had been invoiced.

Deception Easy

There are probably few classes of business which lend themselves so readily to deception as does the seed business, and it is a great pity that so many farmers unwittingly encourage the existence of cheap trading by what appears to be a complete lack of concern or appreciation of the meaning of "quality in seeds."

It cannot be too strongly emphasised that, in common with other commodities, standard market rates for agricultural seeds are approximately commensurate with quality and value, and that, notwithstanding any claims made to the contrary, the basic reason for significantly low prices is inferior quality. Statements in respect of special growing, harvesting, or marketing procedure may be discounted, and could not possibly account for price difference up to 30 per cent. of standard rates.

The Government, through the Department of Agriculture and in co-operation with the established seed trade, has made it possible for all farmers to secure reliable seed supplies, but it is essential that care be exercised in selection and purchase. So far, the Government has not deemed it necessary to introduce measures to prevent the exploitation of farmer buyers, but in the light of recent events it would seem that measures may have to be considered to protect farmer buyers against what may aptly be described as "the cheap seed racket."

The obvious safeguard which a farmer should take is to buy wherever possible Government certified seeds from a reputable firm, and so avoid the possibility of being gulled by attractive advertisements lauding the value of cheap seeds.

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QUALITY AND **SERVICE** IS OUR MOTTO.

45 Years of Service to New Zealand.

We supply full particulars of Government Purity and Germination Certificates to all purchasers of our seeds. Direct Importers of Overseas Seeds, thus fresh stocks are always available. We have our own *up-to-date Seed-Cleaning Plants* at all producing centres.

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After a strenuous spell nothing is more welcome than a smoke of SILVER FERN the popular Cigarette Tobacco.

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CIGARETTE TOBACCO

FOR "MANY HAPPY ROLLINGS"

"As Ye Sow, So Shall Ye Reap"

What Cheap Seed Mixtures Mean To The Farmer

P. S. SYME,
Instructor in Agriculture,
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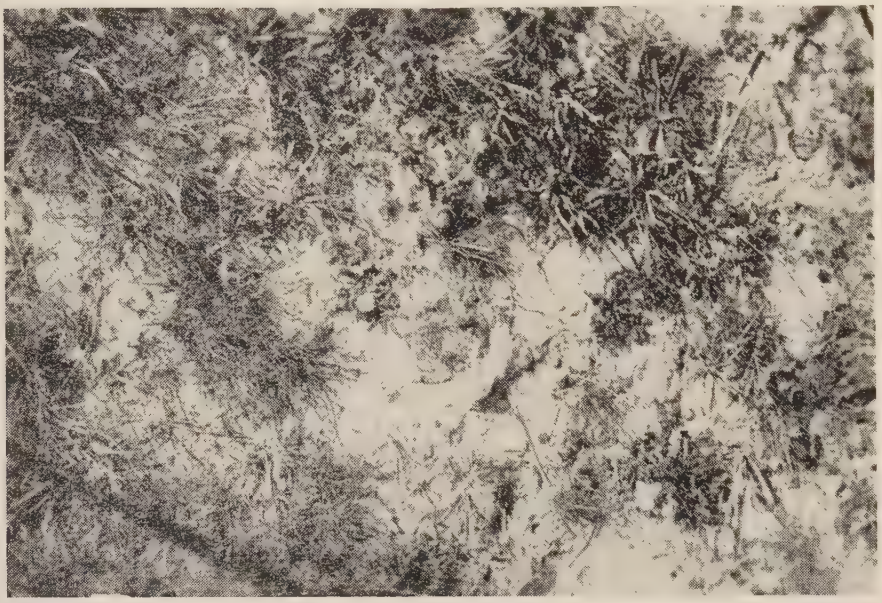

This sowing of cheap seeds has resulted in numerous bare spaces and the poor species of the grasses present.

THERE is an old saying that "Nothing is to be had for nothing, and very little for sixpence." That this is true, in general, everyone with any experience of the world will readily agree, yet the age-old lure of "something for nothing" too often overrides worldly experience and all the dictates of common sense.

While most rules have their exceptions, to the rule "nothing for nothing" there are no exceptions. An even gamble or a gamble against odds with a proportionate reward will at the worst provide a thrill in return for cash; but buying cheap seed is not even a gamble, it is a "cert" for the seller; he knows what he sells, whereas the purchaser can, at best, only guess.

Just what the purchaser of a "cheap seed mixture" expects to receive it would be hard to say. Just exactly what he does receive is very clearly shown by the Officer in Charge of the Seed-Testing Station, Palmerston North, in the preceding article in this "Journal." The results which the farmer obtains from the sowing of such cheap seed can be gauged from a study of the accompanying illustrations, which speak for themselves.

This article is the natural sequence of the analyses which have been made at the Seed-Testing Station. It deals with the results of the sowing of cheap seed mixtures on the farm. It should be noted that the illustrations were taken from two fields which were sown down in the same year on similar soil types. On both fields the preparatory work was thorough, and the seed was sown on a good well-prepared seed bed with a liberal dressing of suitable fertilisers.

The Farming Angle

Let it be said that the analyses of the samples quoted are not exceptional. Several other samples submitted for test from lines of so-called "pasture mixtures" show similar characteristics. The variations from line to line are governed by the material from which such mixtures are drawn. Some comments from the angle of the user in regard to the composition of these mixtures would not be out of place.

Referring to the analysis of the sample marked "B" as given in Mr. Foy's article, it will be noted that while a number of species are enumerated as being present, only three useful species are present in any appreciable quantity. In order to give a sowing of 27½lb per acre of germinating ryegrass seed, 250lb of this mixture would require to be sown! This, in turn, would result in the sowing of 25lb of germinating suckling clover (which would probably be present naturally) and 10lb of germinating white clover on each acre of land.

On the other hand, 2½ ounces each of crested dogstail, chewings fescue, red clover, and cocksfoot would be distributed over every acre. Fog, timothy, and poa species would account for a further 3¼lb per acre, but a sowing of the amazing quantity of 37lb per acre of various weed seeds would result.

The various weed seeds in the sample under discussion have not been enumerated, but from a knowledge of other samples, one might expect to find anything from goose grass, suckling clover and cluster clover, to ribgrass, catsear, sorrel, hairgrass, spurrey, cranesbill, docks, and thistles. Truly a comprehensive mixture!

A Comparison

The unsuspecting farmer would sow this mixture probably at the rate of 40lb per acre. The following table sets out in the first column the quantities of living seeds of any value, and also of weeds, etc., which he would spread on his land. If he attempted to balance the quantity of ryegrass to a normal sowing of 27½lb per acre the quantities of the various seeds distributed would be as given in the second column. In the third column is given, for comparison, the composition of a mixture suitable for use on much of the North Auckland country where cheap seed mixtures are being sown.

It should be noted that the first class mixture is that recommended for districts where paspalum thrives. In other districts suitable adjustments in its composition would be necessary.

Species.	Cheap Seed Mixture. 40 lb. per acre.	Cheap Seed Mixture. 250 lb. per acre.	First Class Mixture. 40 lb. per acre
Ryegrass (living seeds)	4½ lb.	27½ lb.	27½ lb. (certified per rye.)
Suckling clover (living seeds)	4 lb.	25 lb.	nil
White clover (living seeds)	1¾ lb.	10 lb.	2 lb. (certified white clover)
Crested dogstail	1-40 lb.	1-6 lb.	2 lb.
Chewings fescue	1-40 lb.	1-6 lb.	nil
Red clover	1-40 lb.	1-6 lb.	2 lb.
Cocksfoot	1-40 lb.	1-6 lb.	nil
Fog, timothy, poa	¾ lb.	3½ lb.	nil
Weeds	6 lb.	37 lb.	nil
Chaff, etc.	4½ lb.	27 lb.	nil
Paspalum	—	—	6 lb.
Lotus major	—	—	1 lb.

How can such ill-balanced mixtures as this "cheap seed mixture" be recommended either for ordinary pasture establishment or for bush burns?

Further Analysis

To show that the above is not an isolated example, the following extracts and comments from the analyses of five other mixtures are also given:

1. The inert matter is almost 1½ times the amount of useful species.

2. To sow 30lb of germinating ryegrass per acre, about 45lb of assorted weed seeds would also be sown.

3. 300lb per acre of the mixture would need to be sown to provide sufficient ryegrass. Even at that, the ryegrass is of such a poor strain that it could not possibly last in a pasture.

4. The main component of the mixture was lucerne seed, representing 1-3rd of the total ingredients. Of what use is this in a permanent pasture?

5. Ryegrass seed in the sample comprised 24 per cent. with a germinating capacity of 57 per cent., while sorrel comprised 7.6 per cent. of the mixture. With a sowing of 40lb per acre of this mixture one would distribute 5½lb of germinating ryegrass. At the same time one would be placing at least 600 sorrel seeds on every square yard of soil.

Loss to the Farmer

These "cheap seed mixtures" are recommended variously for the establishment of pasture after burning, and for ordinary permanent pasture establishment. In either case the final result is the same—failure to establish a satisfactory sward and loss to the farmer.

If used on bush burns one can realise the loss of grazing until such time as the land could again be burned and resown. On the other hand, these mixtures are being sown, sometimes after a period of fallow, on readily-ploughable land capable of carrying a

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The land on the left was sown with cheap seeds—mainly flatweeds, bare ground, poor quality ryegrass, and very little clover. The land on the right was sown with a well-balanced mixture of really permanent grasses and clovers. Note the tight, close sward, which practically defies weed intrusion, and the vigorous growth of the grass-clover partnership.

first class perennial ryegrass-white clover sward. The failure of these mixtures on such types of land results in the necessity to breaking up and resowing—an expense which could have been readily avoided by the use of a reliable seed mixture at probably a less initial cost. The introduction of weed seeds to the land is a further factor too serious to be ignored.

The Harvest

Considering any of the mixtures analysed, it might very confidently be asserted that, no matter how perfect the seed bed or beneficial the weather, the pastures resulting from the sowing of these seeds must inevitably prove a complete and absolute failure. The age of miracles may or may not be past, but only by a miracle could a mixture of such seeds ever hope to be successful. The weeds and rubbish included in the mixture would provide an excellent smother for any slow establishing species of real value, while the ryegrass and white clover are likely to be of such inferior type that even without weed competition their life in the pasture would not extend beyond a season or two.

There is truth in the words "As ye sow so shall ye reap!" It is hardly necessary to refer to the illustrations to answer the question, "What shall the harvest be?"

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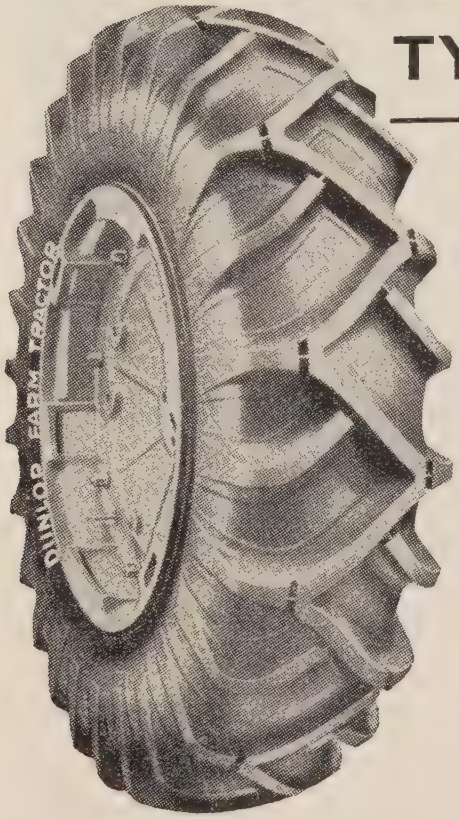

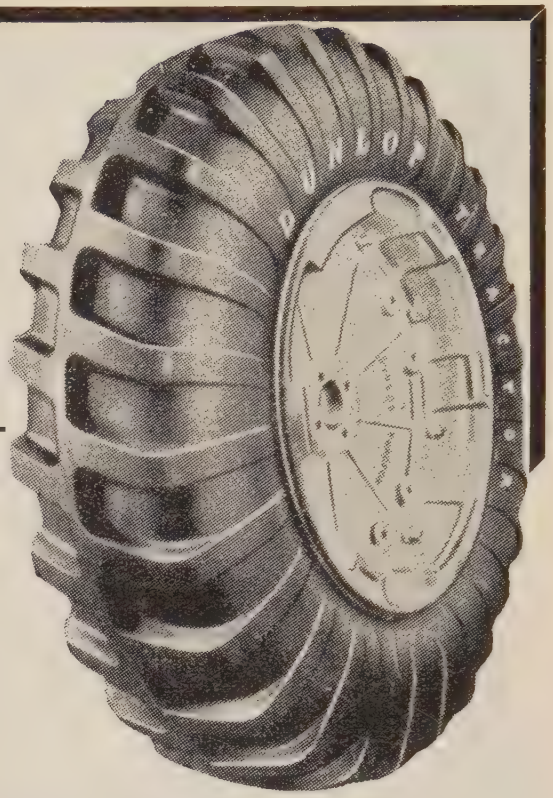

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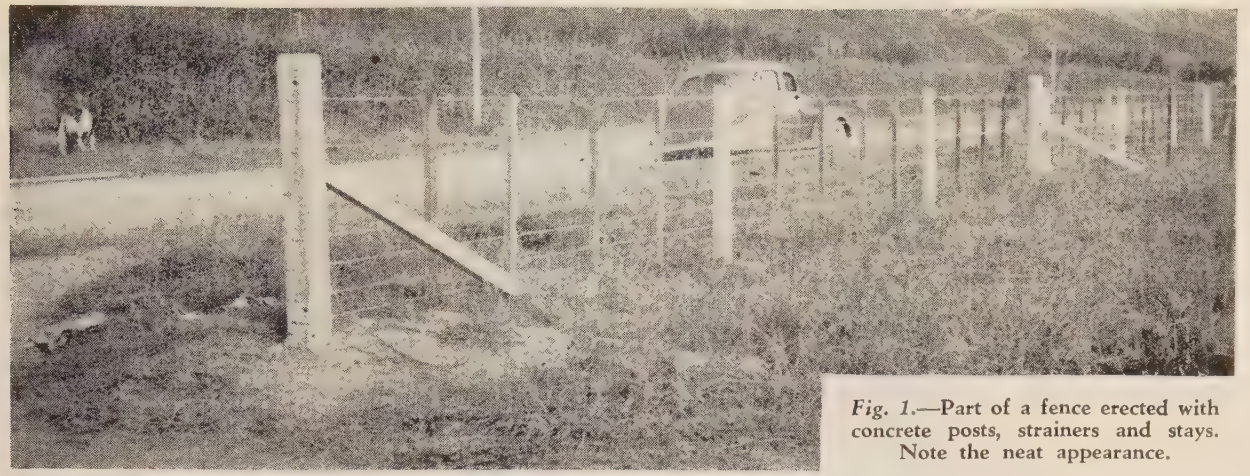


Fig. 1.—Part of a fence erected with concrete posts, strainers and stays. Note the neat appearance.

Concrete Fencing Posts

Manufacture On The Farms Is Not Difficult; Method Described

Concrete is the logical substitute for wooden fencing posts and strainers, for it has many advantages and few disadvantages. Contrary to the impression held by many farmers, the manufacture of concrete fencing posts on the farm is not difficult, as this article shows, and with a little experience really serviceable posts and strainers may be made on the farm at small cost.

IN THESE days of acute scarcity of really first-class wooden fencing posts, strainers, etc., coupled with a correspondingly high price for them, it is not surprising to find many farmers and others engaged in the development of land for farming purposes turning their attention to ways and means of providing an efficient substitute for the wooden article.

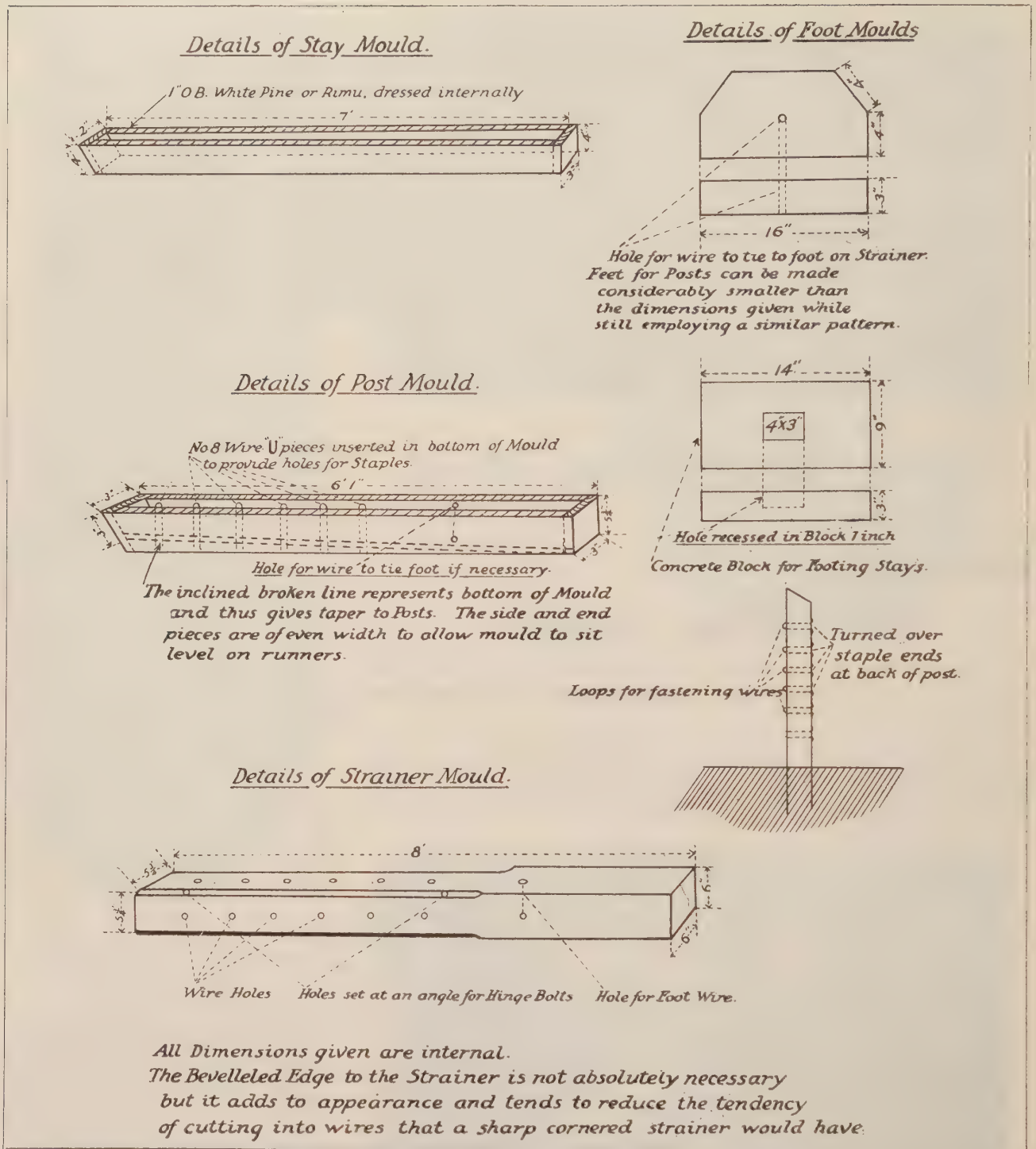
Fig. 2.—A close-up view of a corner of the fence shown in Fig. 1., showing the method of fastening the wires to the strainer by threading them through the holes provided for this purpose. The stay is also constructed of concrete "footed" by the concrete block shown in the right-hand bottom corner of Fig. 3 (left).

—By—

C. R. TAYLOR, Fields Instructor, Whakatane.

In this respect concrete must be the logical choice of all, for no other material known at the present time offers so many advantages as concrete with so few disadvantages. Reinforced concrete possesses maximum durability and strength, and can be readily moulded into any desired shape with the minimum of trouble. It is also proof against fire, decay, and insect attack.

Moreover, the cost of the production of high-class concrete fencing posts, strainers, and stays is actually much


Details of Stay Mould.
1"O.B. White Pine or Rimu, dressed internally
7'
Details of Foot Moulds
16"
Hole for wire to tie to foot on Strainer.
Feet for Posts can be made considerably smaller than the dimensions given while still employing a similar pattern.
Details of Post Mould.
No 8 Wire "U" pieces inserted in bottom of Mould to provide holes for Staples.
6'1"
Hole for wire to tie foot if necessary.
The inclined broken line represents bottom of Mould and thus gives taper to Posts. The side and end pieces are of even width to allow mould to sit level on runners.
14"
4"x3"
9"
Hole recessed in Block 1 inch
Concrete Block for Footing Stays.
Turned over staple ends at back of post.
Loops for fastening wires
Details of Strainer Mould.
8'
Wire Holes
Holes set at an angle for Hinge Bolts
Hole for Foot Wire.
All Dimensions given are internal.
The Bevelled Edge to the Strainer is not absolutely necessary but it adds to appearance and tends to reduce the tendency of cutting into wires that a sharp cornered strainer would have.

less than the cost of purchasing their more inferior wooden counterparts even when it is necessary to purchase gravel and sand at current prices. Where these materials are procurable on the farm, as they are in many instances, the cost of the completed article is further substantially reduced.

Finally the uinformity in design possible with concrete not only measurably increases the efficiency of the articles so manufactured, but very frequently greatly enhances their general appearance when assembled as a working unit, such as a fence line. Figs. 1 and 2 illustrate this point clearly.

Not Difficult

The manufacture of concrete posts, strainers, etc., on the farm is not nearly the difficult undertaking that many farmers imagine it to be, and is certainly not one calling, of necessity, for expert knowledge, although, like everything else, a certain amount of skill

is required to do the job with reasonable satisfaction. However, this is readily developed with a little experience, and from then onwards the task is little more than of a routine nature.

In support of this contention it may be stated that for some time past the Native Department, Whakatane, has successfully utilised unskilled Maori labour at its Ruatoki Scheme to construct concrete fencing material after a short initial training in the work provided by a worker with previous experience. The illustrations show the class of work that the Maoris are now turning out.

While there are on the market concrete post-making machines for which general satisfaction is claimed by their makers, there are also many farmers who still prefer to adhere to the easily and cheaply-constructed wooden moulds, and who, with them, turn out really serviceable posts and strainers with a minimum of labour and trouble once the small amount of necessary equipment has been provided.

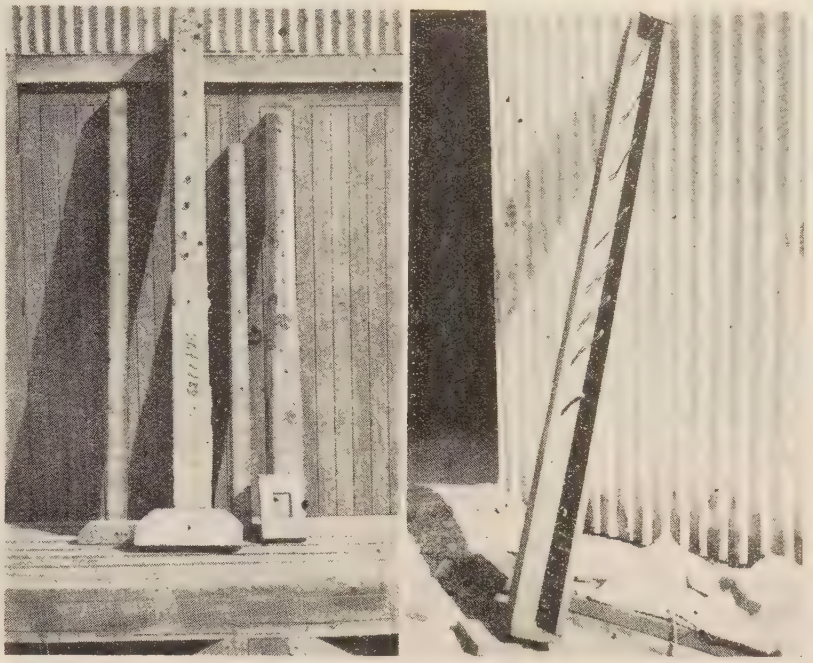


Fig. 3.—Left: A group of concrete units used in the erection of fence lines. Left to right are: Post with foot at bottom, strainer with foot at bottom, stay and corner post with stay block at bottom. Right: A fresh mould showing the method of using "U" pieces to provide the staple holes. The mould is actually ready for filling.

Simple Layout

Fig. 4 (left) illustrates the concrete post-making layout controlled by the Native Department at Ruatoki, which is capable of manufacturing well in excess of 100 posts per day. Simplicity is the keynote of the layout, and the cost of providing it was very trifling in comparison with the value of its output.

For the small farm a somewhat similar layout could be constructed at very little cost, and with 24 moulds the farmer would be well equipped to turn out all the posts and strainers, etc., he required. Moreover, the job is an admirable one for profitably filling in wet days as, provided the freshly-filled moulds are adequately covered from the rain for a few hours, no harm can possibly result from the inclement weather. Sacks placed over the moulds in such a way as to drain off most of the water make a sufficient cover for this purpose.

The moulds should be constructed of timber dressed at least on one side and of sufficient thickness to ensure rigidity. In actual practice it is found that 1in O.B. white pine makes the best mould, but if this is not procurable then O.B. rimu is quite satisfactory. Reasonable care should be exercised in making the moulds, and if this is done they will not only give many years of useful service, but will also greatly add to the efficient handling of the work. Details of mould construction are furnished later in this article.

Filling the Moulds

Before being filled the moulds require to be thoroughly cleaned of any

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old concrete adhering to them, and then well oiled with an oily rag (old engine oil is ideal for this purpose). Next, when the "U" pieces used to form the staple holes are inserted in their appropriate places in the bottom of the moulds, they are stacked in a convenient position within easy reach of the runners.

When required for filling, three or four moulds are taken from the stock, placed on one set of runners, filled, pushed along the runners, and the process repeated until all moulds have been filled. After being allowed to set for two or three hours the "U" pieces are carefully taken out and cleaned in readiness for the next batch of posts, which can be made on the other set of runners while waiting for the previous batch to set sufficiently to be removed from the moulds. This can usually be accomplished in 48 hours, and presents no difficulty.

The "green" posts are then laid at the extreme end of the runners for another day or so, after which they may be removed and stacked in a heap, as shown in Fig. 4 (right). Each set of runners requires to be at least double the length of the aggregate width of half the moulds in use—that is, if a total of 24 moulds were being employed, and if each one was 6in wide, then each set of runners should be 6in x 12in equals 6ft in length. A greater length would, however, be an advantage and could be provided at little extra cost.

Best Mixture

For best all-round results a 5 to 1 mixture is probably the best that can be used in the manufacture of posts. This is made of five parts of aggregate and one of cement—that is, three parts screened shingle or metal chips (½in and under), 2 parts clean, sharp sand, and one part cement. Only sufficient water should be added to ensure that the mixture runs freely into the moulds to fill every void.

If too wet, the mixture loses much of its cement through the leaching of surplus water, thus causing weakness in the finished post, and if too dry it is impossible to secure density, the result being a porous, spongy post that soon absorbs moisture and splits to pieces because of the rusting and consequently swelling of the reinforcing.

For posts four rods of No. 6 mild steel are sufficient for reinforcing pur-

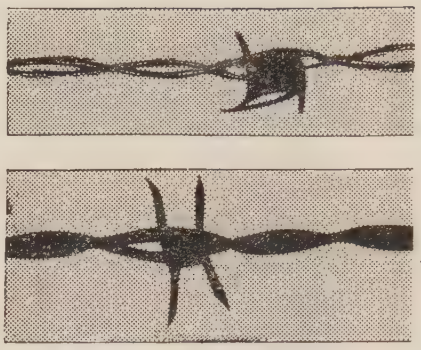
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Fig. 4.—Left: A typical concrete post-making layout and the simple equipment necessary. In the foreground are two sets of runners. On the left-hand set is a battery of filled moulds, while on the right are a number of posts just turned out of their moulds. Right: Stacks of concrete posts in the process of maturing. This usually takes about 30 days.

poses, and for strainers four rods of 3-8in mild steel should be used. These rods are easily placed in position while the moulds are being filled, and a little experience will quickly overcome any initial difficulty, if any, that might be encountered.

During the process of filling, the ends of moulds should be raised slightly from time to time and tamped down sharply on the runners to make perfectly certain that the mixture settles down into a solid mass and so prevent the development of voids, which cause a weakness in the completed article.

Materials

The following table sets out the quantities of materials required in the manufacture of strainers, posts, and stays, etc., of the sizes indicated in sketches of moulds.

Per Strainer	Per 100 Posts	Per 100 Stays	Per 150 strainer foots or 300 post foots
37½lbs. cement; 1-12 yard aggregate; 11½lbs. ⅜in. mild steel rods for reinforcing.	* 8 bags cement; 2 yards aggregate; 1 cwt. No. 6 mild steel rods for reinforcing.	As for posts	*4 bags cement; 1 yard aggregate.

* For practical purposes 1 filled cement bag = 1-20 yard.

After the posts have been turned out of the moulds they are soft or "green," and in this condition are easily broken unless every care is taken in handling them. In these circumstances it is wise to allow the "green" posts to remain on the end of the runners for a day or two before finally stacking them in a convenient place for further maturing.

This maturing process will take a month to reach a stage at which it is perfectly safe to use the posts for fencing purposes, although the maturing or hardening effect continues steadily for many years. This is characteristic of all concrete work, and is, therefore, one of the chief reasons for its use where permanency is an essential factor.

Stapling the Wires

Stapling the wires to concrete posts is very simply accomplished by using a long staple made of a piece of No. 8 galvanised wire. This is first placed over the fence wire, then through the two small holes provided at each wire point on the post, and finally the ends bent over about an inch, as shown in the sketch. Such an arrangement is not only neat and easily used, but is also highly efficient.

In conclusion, the writer desires to record his indebtedness to officers of the Native Department, Whakatane, for valuable assistance in the preparation of this article.

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Milk Fever and Grass Staggers

Recommendations For Prevention And Treatment

Contributed by the LIVESTOCK DIVISION.

Recommendations on the prevention and treatment of milk fever and grass staggers in dosing cows are set out in this short article by the Livestock Division. Both complaints are associated with the calving period, and preventive measures should be undertaken immediately.

Milk Fever

MILK FEVER occurs usually within a period of three days following calving. The type of cow most likelv to develop milk fever is the heavy-producing cow in high condition

The symptoms of milk fever are well known to farmers, but the outstanding feature associated with this disease is rapid loss of consciousness following the initial unsteady gait and collapse of the cow.

Cows in a herd which can be regarded as being susceptible to an attack of milk fever should be kept off young spring pasture for some time before calving, and be provided with hay and other supplementary feed. A good practice is to sprinkle the hay with a strong solution of molasses in water.

Recommended Drench

Susceptible cows might also be given a drench, as follows:—

Calcium chloride, 2 oz., dissolved in a pint and a half of hot water, to which is added 2 lb. of molasses or treacle.

Good results have been secured by giving this drench twice during the week before calving, and once immediately after.

When a cow has gone down with milk fever the first essential is thorough inflation of the udder after proper sterilisation of the milk fever outfit and cleansing of teats. The cow must then be propped upon her brisket and kept in the normal sitting posture until recovery takes place

The danger of drenching while the cow is unconscious cannot be overemphasised; there is always a danger of the drench going into the lungs if it is given while she is in a comatose condition.

If the cow does not get up within a few hours after udder inflation, and she has sufficiently recovered consciousness to allow of drenching, the drench recommended above should be carefully administered. It is important in drenching a recumbent cow not to raise the head unduly, otherwise the cow may easily be choked.

Grass Staggers

Grass staggers commonly occurs from six days to a month after calving, but might be seen earlier or later. The disease is characterised by extreme nervous excitement, the cow frequently showing severe convulsions. In differentiating this disease from milk fever it can be stated that coma, or loss of consciousness, is not a feature of grass staggers.

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The addition of Epsom salts to the drinking water has been recommended as a preventime measure, and has been followed by some satisfactory results. First add 1 oz. for every 5 gallons of water in trough. Then add daily 1 oz. for every cow drinking from trough. Also, the giving of molasses is recommended as in the case of milk fever.

Treatment

Many treatments have been tried, and all have occasionally been followed by recovery. The one which, in our hands, has given consistently the best results, particularly in the subacute cases or earlier stages, has been the giving of magnesium sulphate (Epsom salts) subcutaneously or by the mouth, if necessary followed by plenty of molasses and stimulants.

Drenching is always risky, as an attempt to give a drench to a cow in this excitable condition often causes a convulsive attack. If, however, the animal can be drenched quietly, and, if possible, still in the paddock, give about 6 oz. Epsom salts with 2 lb. to 3 lb. of molasses dissolved in a pint of warm water.

If too nervous to be drenched or actually in a fit, the animal may be given 4 oz. to 5 oz. of Epsom salts dissolved in 6 oz. of boiling water, and then allowed to cool to blood heat. This may be injected by means of a funnel or tube and needle, or even with a hypodermic syringe under the skin, preferably in the side of the neck in front of the shoulder blade.

Follow up, say, in four hours, with a powder containing 3 drams of carbonate of ammonia in cold water as a drench. Molasses should be combined with all drenches. Further salts should be given the following day, and, even if recovery appears complete, small doses should be given twice a week for next two or three weeks.

Results with animals still on their feet are usually satisfactory. Animals remaining down after a fit rarely respond to any treatment, but full doses of 4 drams of carbonate of ammonia with 1 dram of nux vomica can be tried twice a day, with plenty of molasses.

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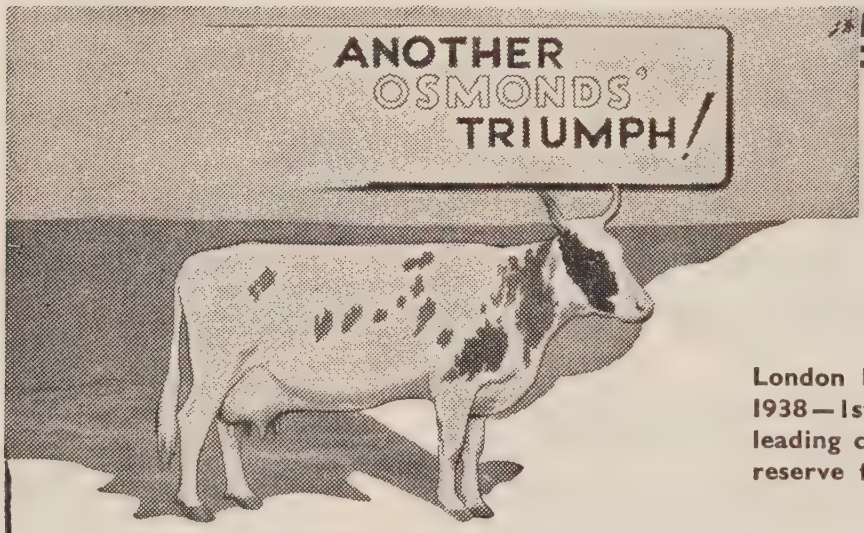

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Equipment For The Milking Shed

Correct Installation Is Necessary

Contributed by the DAIRY DIVISION.

BEFORE dealing with the equipment of the milking shed it may be as well to mention some points in connection with the actual construction.

No milking shed can be regarded as satisfactory unless a good job is made of the concrete work. Any error in the timber work can be put right between milkings, but the whole job is frequently a failure because of faulty concrete. If you have no experience of this class of work employ someone who has, rather than risk a failure. See that the foundation is sound before you start, and if fillings must be made make sure that they are rammed solid before laying any concrete. Use clean gravel and sand, or, if it is dirty, wash it before mixing. Clean material requires less cement and makes a stronger job than dirty material.

Mix thoroughly so that each particle of gravel will have a coating of cement. Use plenty of water, and ram the "green" concrete thoroughly when laying it to bring the cement and sand to the top. It will then be easy to get a smooth surface. Keep the concrete wet for several days after it is laid. If you are in doubt on any point call in your Farm Dairy Instructor. The cost of the four-cow shed described may be £100 or it may be £500, depending on the site, local costs, and the class of finish which you decide upon, and it is therefore wise to do the job properly.

When we speak of equipment for a dairy in New Zealand we naturally mean what is known as a machine shed, and the subject will be dealt with from this angle.

Supply of Water

Before passing to details, the necessity for a plentiful supply of water should be stressed. Where a plentiful supply of water is available, the shed described is easily kept clean with a minimum of labour. If taps are provided in each bail fresh water from a hose can be used for washing the cows' udders instead of unclean water in a bucket.

It is a good plan to hose down the yard again before each milking, as it will keep down the dust and be much easier to wash afterwards. The falls necessary to ensure efficient drainage and gutters to bring it all to one point, from which it can be conducted to the sump (which must be 30 feet from the yard) are shown on the Department's plan.

If you have decided to install a milking plant it will be wise to ask the Farm Dairy Instructor to inspect the dairy so that any constructional defects can be put right before the machine is erected. As a further safeguard, every contract to purchase should contain a guarantee clause stating that the plant, when installed, will comply with the requirements of the Dairy Regulations.

Allocation of Cost

In the case of a tenant farmer any alterations to the dairy which may be required by the Farm Dairy Instructor, who would be acting as an inspector in these circumstances, are dealt with by the 1926 amendment to the Dairy Industry Act, 1908. Briefly, these conditions are:—If the tenancy has not more than two and a half years to run the owner pays the whole cost; if the unexpired term of the tenancy exceeds two and a half years the tenant is required to pay five per cent. of the total expenditure for each year of the unexpired term, provided in both cases that the farm was leased as a dairy farm in the first instance; where a tenant begins the business of dairying on leased land without the consent of his landlord the tenant must bear the whole of such expenditure.

The regulations dealing with the erection of milking machines throw the responsibility for the correct installation in the first instance on the owner and occupier. In most cases the owner will also be the occupier of the farm and the owner of the herd and machines, though he may have a sharemilker in charge. The occupier

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may be a lessee, a sharemilker who owns the herd, or whose conditions of contract require him to supply the milking plant.

To ensure compliance with the regulations certain responsibilities are also thrown upon the person selling the milking machine, conjointly with the person purchasing it. Thus, Regulation 4 requires notification to be given to the Dairy Division by any firm, agent, or person about to erect or re-erect a new or used milking machine, vacuum pump, an engine intended to drive a milking machine, or a water heater other than an electric water heater.

Notice by Seller

As most of these items, which are sold in New Zealand, are erected by the seller, the notice is generally furnished by him. This also applies where a person contracts for reconditioning a used milking machine. But should a person buy a new or used milking machine and erect it himself, or employ another person to erect it for him, he must first notify the Dairy Division of his intention to do so.

Another clause requires that all second-hand plant and vacuum pumps must be inspected and passed by the Dairy Division before re-erection.

From the point of view of the milking machine company, the regulations are very far-reaching, but the owner shares the responsibility with him conjointly. It is required that none of the items enumerated shall be erected in a milking shed if they fail in any way to comply with the requirements of the regulation. Here again the owner is responsible if he purchases a machine and arranges for its erection.

It is further provided that "no person shall contract for the erection, etc., if the terms of the contract involve any conflict with the requirements of the regulation." It will thus be seen that both parties to the contract—that is, the purchaser and the seller of the machine—are liable for any breach of these requirements.

Another clause of Regulation 4 requires that no milking plant shall be erected in any dairy which does not comply with the requirements of Regulation 3. The necessity for the owner and the milking machine company making sure that the dairy is in order before erection is begun and that the erection is carried out correctly is therefore apparent.

Simple Procedure

The regulations quoted appear to create a difficult position for those concerned, but actually the procedure is very simple. The general practice is for the salesman to get into touch with the Farm Dairy Instructor concerned and ask him to visit the farm and advise the owner whether any alterations to the shed are required before proceeding with the erection of the plant. In actual fact, the manufacturers of milking machinery have asked for the conditions for the installation of plants to be laid down so that they would all be placed on the same footing. In most cases they have been consulted before the regulations have been made.

The milking machine as first designed was necessarily very crude, and it would probably be correct to say that more patents have been registered in connection with its development than for any other machine used in any industry in the Dominion. In dealing with these many changes in design the Dairy Division has allowed

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practically a free hand to manufacturers, provided there was nothing which prevented the plant being kept in a hygienic condition. As defects were noted, steps were taken to point them out to manufacturers, and, if necessary, to deal with them by regulation. It is perhaps worth mentioning that while there have been many hundreds of changes in the design of the milking machine, there are only ten clauses of one regulation which actually deal with the design and erection of these plants.

Changes in Design

In the bucket plant — the first to be used — the parts with which the milk actually came into contact were few, and the bucket acted as what is now known as an interceptor. With the invention of the releaser it was soon found that the black iron pipes which had been used in the air system of the bucket plant were quite unsuitable because of the difficulty in cleaning them when they became dirty, as they very soon did. Tinned brass piping was used in the milk line from the beginning, and it was not long before experience showed the necessity for using tinned brass for the air pipes also. This was done voluntarily by some manufacturers.

The next step was to require the provision of unions for the purpose of dismantling, and plugs to facilitate cleaning. The original vacuum tank had no openings to allow for cleaning, and must now be in two parts or have a cover which is the full diameter of the tank. All piping must be as straight as possible and the milk pipe must have a fall of not less than ¼in. or not more than 1½in. in every seven feet, and must be supported with brackets at specified intervals.

The whole of these requirements are intended to provide facilities for washing and sterilising the parts with which the milk comes in contact, the object being the production of a supply of pure milk.

The points dealt with in the last four articles are covered more fully in Bulletin No. 154, which may be obtained free from officers of the Dairy Division, or the Director, Dairy Division, C/o Department of Agriculture, Private Bag, Wellington.

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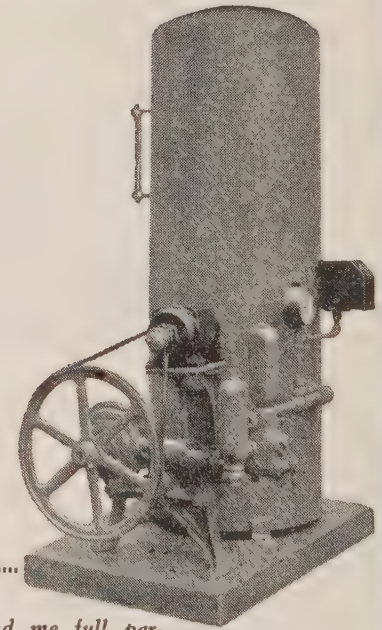

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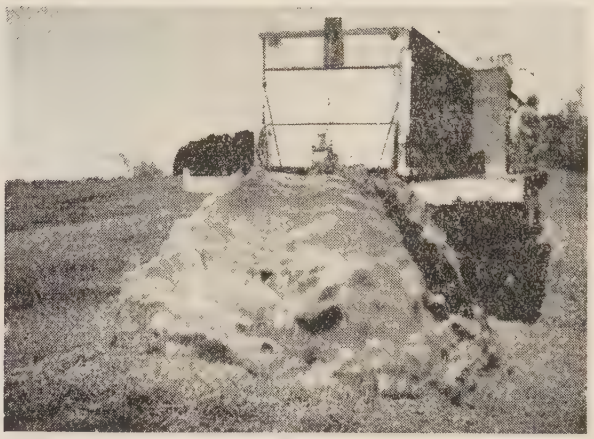
Liquid Manure on Dairy Farms

Practical Methods Of Returning Animal Manure To The Pastures

By A. G. ELLIOTT,

Formerly Instructor in Agriculture, New Plymouth, and now Crop Experimentalist, Wellington.



Liquid manure being spread on Mr. R. B. Sutton's farm at Inglewood.

THE manurial value of animal droppings and urine has been recognised for many years by farmers generally. The return to the soil of this material to help maintain fertility on ploughed land has been a standard practice adopted in this country from the experience of older countries. On the dairy farms of the Dominion, however, harrowing the pastures to spread droppings has been the main example of an appreciation of the value of animal manure.

The disposal of the droppings and the washings from the milking sheds and yards and from the pig sties has always been a problem. The usual solution—that of carrying this material off to streams and rivers by drains—is definitely wasteful, particularly of minerals. Practical and effective methods of returning milking shed and pig sty cleanings to the pastures where the manurial effect is outstanding have been developed in Taranaki on upwards of 40 farms.

> The introduction of the practice of applying liquid manure under Taranaki conditions has given marked results, and has provided a method of coping with formerly waste substances which were possible sources of trouble in dairy produce. From the data obtained from the 27 farms investigated, the installation of plants on all forms of suitable contour can be confidently recommended.

The procedure is somewhat as follows:—At a safe distance from the milking shed a sump, either cement washed or concrete-lined, is built to hold from 1000 to 5000 gallons. A shallow depth is advantageous, especially where liquid is held for some time, as this allows better mixing (solids tend to collect on the bottom) and is also more convenient for cleaning out the intake of the pump. The droppings are washed into this with sufficient water to clean the concreted shed floor and yards. Rain water is not desirable generally, and is diverted from the sump when necessary. The sump is emptied either by a hand pump or an electric pump at intervals, as required, into a distributing tank mounted on a sledge or motor truck.

The material is then distributed on to the pastures or cropping areas. Various types of distributing apparatus are employed, the choice depending on finance and labour available and the amount of material to be handled.

It is desirable to protect the inside of an iron tank from the action of the liquid manure and to provide a brass tap rather than an iron one for the outlet of the tank.

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Cost of Outfits

On farms where up to 50 cows are milked, and with the usual labour available, the following layout has been found economical and satisfactory:—

Sump, cement lined, 5ft. x 10ft. x 3ft, 1,000 galls. (own labour)	£7 10 0
Hand pump, 6ft	£6 0 0
200 gall. tank on sledge, complete	£23 0 0
Total approximate cost .	£36 10 0

With a plant similar to that described the sump can be conveniently emptied once a week and, provided a cut-off is inserted to carry away surplus water and a top built to exclude rain, little difficulty is experienced. Where the sump can be built to permit gravitation of the material into the tank, time and labour are saved, but this is not possible on many farms.

Larger Layouts

On larger holdings where more cows are in the shed each day, and

Showing the effect of applying pig sty wastage on Mr. L. A. Alexander's farm. The dark pasture on the right was treated with manure, while that on the left was untreated.

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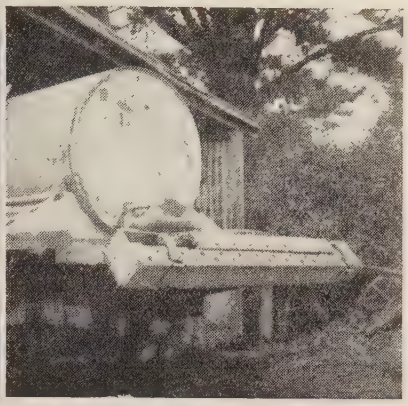


Left: **The overhead tank being filled on Mr. Sutton's farm. This tank has been partialy eaten away, and a wooden tank will be used in future.** *Right:* **A close-up of the spreader.**

also on the bigger pig-raising farms, the more expensive layout with electric pumps is installed. Details are as follow:—

Sump, 10ft. x 12ft. x 7ft. deep, 5,000 galls. (own labour)	£11	0	0
Electric pump and 1½ h.p. motor, complete	£38	0	0
400 gallon tank and fittings	£10	0	0
Total approximate cost .	£59	0	0

With such a system the material can, if necessary, be allowed to accumulate before emptying the sump, and the larger tank is transported on a motor lorry. One of the great advantages in this layout is that the work of distribution can be completed much more rapidly and economically than where the hand pump and sledge are operated and where labour is short. This is an important factor on the farm.

Local Installations

One of the pioneers in this practice is Mr. R. B. Sutton, Inglewood, who first began applying liquid manure 14 years ago, and his present layout is based on the practical experience and results secured during that period.

The whole farm of 98 acres has been topdressed at least once with liquid manure from the pig sties, and it is of particular interest to note that metal tanks and fittings are fairly rapidly affected by this form of manure, with which no water is mixed. From the cement-lined sump containing approximately 1000 gallons the material is pumped into a wooden tank holding 350 gallons and fitted with a 3in. brass tap above a copper sheet for spreading. To give more efficient working it is proposed to build baffle plates into the tank, after which the outfit will probably incorporate all the best features in a plant of this nature.

Very good results have followed the application of this wastage from the pig sties, and it is intended to build another sump to collect washings from the shed where about 60 cows are milked on the same farm.

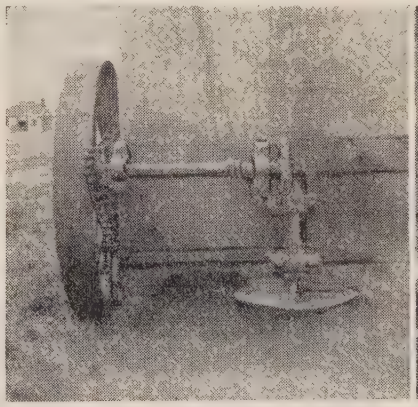
A Modern Plant

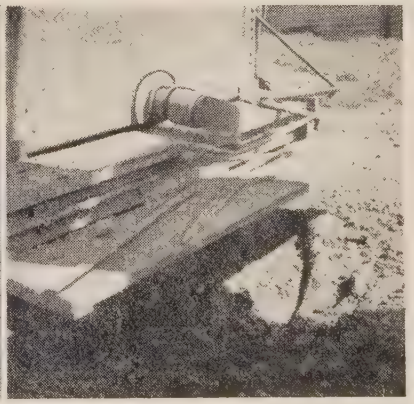
An example of a modern plant with a double sump to deal with both pig sties and cow-shed washings is seen on the farm of Mr. A. R. Longstaff, Egmont Village. Each sump measures 16ft. x 8ft. x 3ft. 6in. deep, and will hold approximately 15 tons, the material from each source being kept separate. In a separate chamber 3ft. x 2ft. the material from each sump can be mixed through outlets, the surge providing the mixing so essential for even distribution.

From experience, Mr. Longstaff has proved that the residue from the cow-shed lasts longer than that from the pig sties, and he now applies a half-and-half mixture with very good results. This farmer has annually increased his butterfat production up to last year by 1000lb., but after installing the plant for distributing liquid manure his returns rose by more than 2000lb for the season.

Mr. J. N. Blyde, Lepperton, some years ago installed a smaller outfit with a hand pump and 1,000 gallon sump, and marked results followed the application of liquid manure from the cow shed to both pastures and land used for crops. On one field, where strips were topdressed with sulphate of ammonia in varying quantities per

The distributing tank used by Mr. J. N. Blyde.





A close-up of the spreaders used by (left) Mr. J. Shepherd and (right) Mr. A. R. Longstaff.

acre as a trial against liquid manure, the liquid manure appeared on observation equal to 1½ or 2 cwt. of the artificial fertiliser per acre.

Convincing Results

The application of liquid manure was not followed by openness of the sward and weed invasion, as is so often seen under local conditions after sulphate of ammonia.

On his dairy farm at Tariki, where 135 cows are milked, Mr. J. Shepherd has not installed a sump, but shed washings are carried directly into the tank cart, which distributes the liquid manure each day. The generally deteriorated pastures on this holding, on which the butterfat has been increased from 11,000lb. to 42,000lb. in seven years, have been improved by harrowing, surface sowing, and topdressing in addition to applications of liquid manure. Differences between treated and untreated strips of fields on which the tank cart has been operating have been so marked that the value of the practice is obvious to all who inspect the results.

Conclusion

The introduction of the practice of applying liquid manure under local conditions has given marked results, and has provided a method of coping with formerly waste substances which were possible sources of trouble in dairy produce. Contrary to the freely expressed opinion that growth would become rank or feed unpalatable after applications of liquid manure, it has been amply proved that growth is well controlled and that cows will graze over the treated area within a few days under the usual conditions of frequent rainfall.

The usual applications of artificial fertilisers are still necessary to maintain balanced growth and provide palatable feed, but the value of the flush following liquid manure topdressing without opening up the sward is considerable. From the data already obtained from the 27 farms investigated on which liquid manure is regularly used, the installation of plants on all farms of suitable contour can be confidently recommended. The fact that the number of outfits is growing steadily each year indicates the appreciation by local farmers of the value of the practice.

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Pasture Consumption By Sows

Experiments At Ruakura Animal Research Station

C. E. BALLINGER, Assistant Experimentalist, Ruakura Animal Research Station.

A COMMON practice in pig management is to turn the sow out at weaning to forage for herself in the cow paddocks, and, whatever the quantity or quality of the pasture, it is considered to be adequate for all the sow's needs.

Sows which have reared a good litter invariably milk off their flesh and fat reserves in doing so, and therefore are turned out to graze in low condition. Very little of this lost condition is regained, especially in the winter when there is very little growth of pasture. In the summer, grazing conditions are better, yet one frequently sees sows in poor condition in summer as well as in winter. In carrying out investigations into the nutrition of sows and litter production, the question arises: How much grass does a sow eat in a day?

The quantity of grass the sow will eat depends not only on what is available in the paddock, but also on the quality of that grass. Rank, fibrous grass is of little use to the sow and, unless starved, she does not eat it.

The quantities of pasture consumed by sows is of great importance when they are not receiving supplementary feed. From experiments at Ruakura it is found that sows on pasture alone barely hold their condition in winter and do very little better in summer.

Pigs are keen discriminators and will first of all select the various clovers and flat weeds, and, while ryegrass in the young succulent stages is well grazed, Yorkshire fog and paspalum are left untouched.

Movable Pen

In order to obtain information on grass consumption by sows a movable pen was constructed in which a sow could graze an area of 196 sq. ft. The sow was moved to a fresh plot every day, and the grazed and the adjacent non-grazed plots were cut and weighed, the difference in weight between the two being taken as the amount of pasture consumed by the sow.

A small error is involved because of the assumption that no variation existed between adjacent plots before grazing. This would, however, cancel itself out over a number of recordings.

The area over which the sow grazed was a fenced-off portion of a cow paddock in which a number of other experimental sows were also grazing. These formed a useful comparison in respect to variations in live weight of sows under extensive grazing conditions. The experimental grass was about 4in to 5in high, and consisted of the usual mixed cow pasture.

The first sow was placed on trial about seven weeks before she was due to farrow and was retained until about a week before farrowing. After giving the sow a week to become accustomed to the new conditions she was weighed and placed on trial; thereafter she was weighed weekly until

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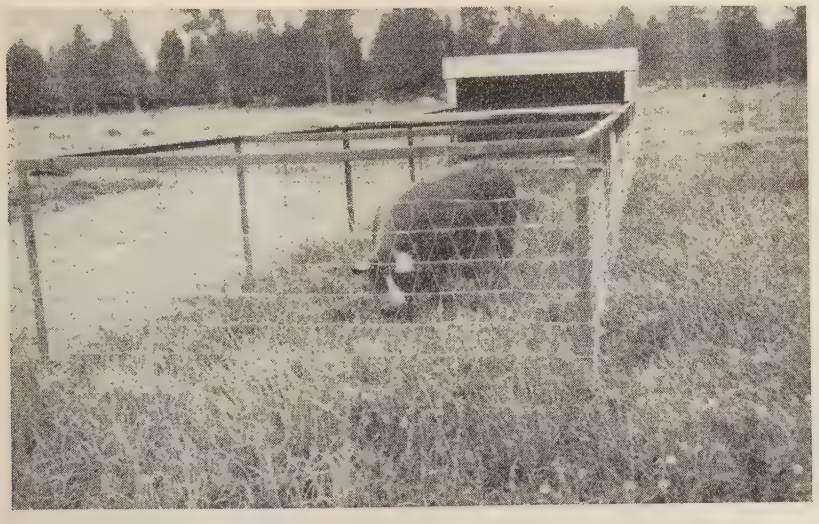

The grazing pen in use.

the end of the trial. Some 48 grazed and ungrazed plots were cut in 30 days, and the liveweight of the sow, together with the average daily grass consumption, was as follows:—

Date of Weighing	Weight of Sow (lb.)	Mean daily Consumption of pasture (lb.)
26/12/38	359	—
2/1/39	371	21.1
9/1/39	360	22.0
16/1/39	367	30.0
23/1/39	366	23.0
28/1/39	359	25.0

Mean consumption = 24.2 lb.

Weight Unchanged

It is seen that in spite of the sow being heavy in pig her weight had not increased at the end of 33 days. Some fluctuations are present, but this commonly occurs where the ration is bulky.

In order to gain further information another sow was placed on trial. The sow used was one which had weaned a litter some weeks previously and was in excellent condition when placed on trial, but was not in pig. This sow was on trial for 31 days, during which time 54 grazed and non-grazed plots were cut. The results obtained are summarised as follows:—

Date of Weighing	Weight of Sow (lb.)	Mean daily Consumption of pasture (lb.)
23/2/39	487	—
3/3/39	502	21.0
9/3/39	509	23.1
16/3/39	504	24.6
23/3/39	490	21.8
27/3	500	19.4

Mean consumption of pasture = 21.9 lb.

The liveweights recordings again show considerable variation and since at the weighing of 23/3/39, the sow's weight was only 3lb above the initial weight it is reasonable to assume that variations in stomach contents were the chief cause of liveweight fluctuations. This was substantiated by the liveweight variations of the other experimental sows which had free range of the paddock, for, while those sows could exercise greater selection in grazing, it would be offset by the extra energy used up in travelling over the paddock.

Better Management

The quantities of pasture consumed by sows is of great importance when they are not receiving supplementary feed. The sow, unlike other farm animals, has no store period during which body reserves can be built up. She is producing all the time. From the results of the trial it appears that about 20lb to 25lb of cow pasture can be dealt with by mature sows.

Twenty-five pounds of grass is barely the maintenance ration of sows of 400lb to 500lb weight, and there is no doubt that the poor condition of sows so commonly seen shows the need for better sow management.

From observations throughout the year and weekly weighing of experimental sows at Ruakura it is found that sows on pasture alone barely hold their condition in winter and do very little better in summer. If they are well fed while suckling the litter and the litter is a small one, then sows stand some chance of regaining condition. If, on the other hand, the litter is large the sow will be in low condition at weaning, and whatever the condition at weaning it will be much the same at the next farrowing if pasture is the only source of feed.

It is remarkable that while most farmers will agree that both cows and sheep must be in good condition to give the best results the sow, which is by far the greater producer, is ex-

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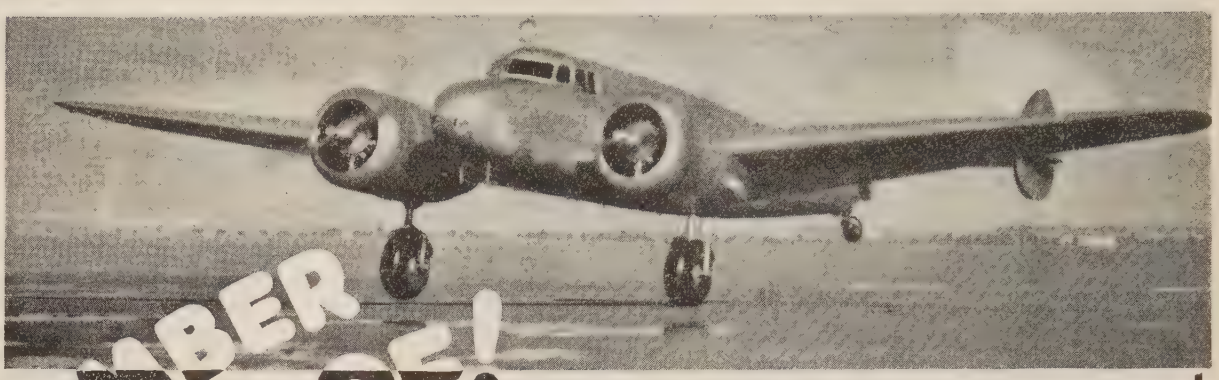
pected to give her best results while living for two-thirds of her time on a sub-maintenance ration.

For sows to produce to their maximum they should be fed up to five or six gallons of skim-milk per day after weaning until they regain condition lost in suckling the litter. From then on they should be fed enough to hold that condition until five or six weeks before farrowing, when the ration can again be increased, and so have the sows farrowing in a good rising condition.



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The Scientist and The Farmer

Application of Research To Agriculture

Professor E. R. HUDSON, Director of Canterbury Agricultural College, Lincoln.

Testing for mastitis by the brom thymol blue method.
[H. Drake, photo.

BEFORE dealing with particular instances of the way in which science is applied to agriculture it may not be out of place to dwell on some of the results now in evidence.

Of outstanding importance is the fact that the fear of famine no longer exists. In these days when foodstuffs are produced in abundance, and sometimes even a super-abundance, it is easy to overlook the fact that only a short time ago, historically speaking, widespread shortages of food were not uncommon.

Science, as applied to agriculture, has removed one of the greatest fears which beset mankind. Not only are we producing our foodstuffs and similar requirements in greater quantities than ever before, but we are doing so with many less workers, and today, in most countries, the rural population is proportionately much smaller than in the past.

In the primitive England of 1086, 76 per cent. of all the men were engaged in agriculture. In the United States of America in the 70 years from 1850 to 1920 the number of rural workers dropped from 56 per cent. to 26 per cent. of all occupied persons.

Great Significance

Such changes, brought about by the application of modern methods—practically all due to science—are of tremendous significance. Now, to a greater degree than ever before in the history of the human race, the securing or producing of food has ceased to be the all-absorbing task of the majority of able-bodied men. For this reason the race is now free to move forward to the development of a standard of civilisation and of culture never before possible.

It is true that in the past certain groups of people, through specially favourable conditions, were able to provide themselves with a reasonably well assured and abundant food supply. Food-getting became an activity which did not occupy the full attention of the bulk of the people. It was under such conditions that civilisation developed and the fine arts and culture found a place. The valley of the Nile when occupied by the Ancient Egyptians is an instance of this.

In general, and throughout the world's history, advancement took place only in those regions where the problems of procuring food were at least partly solved.

On the other hand, in those areas and in those periods when the obtaining of a sufficiency of food was a serious difficulty, little or no advance-

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ment was made. The lessons of history would indicate that, through assuring us of an abundant food supply, the application of the physical and natural sciences to agriculture has opened the door to a new world, and the race is now free to move forward to the development of a standard of civilisation which was never before possible.

Heaven or Hell?

This new world is ours to mould as we may. It is in our power to make it a heaven or a hell, and today we must admit that the one seems scarcely less likely than the other.

Without labouring the point further, we can realise that the ease with which food and other raw agricultural products are now obtainable marks a fundamentally important stage in progress, but it is doubtful whether the average person realises to what extent existing conditions are made possible only through the application of science. For instance, we are all prone to overlook the fact that our modern machinery, which is playing so big a part in agricultural production today, is the outcome of the work of the physicist, the chemist, and other scientists. The fuel for our machines, the steel and other alloys of which they are so largely constructed, the rubber used for tyres and other parts, the paint which protects them from corrosion, and a hundred other things which are involved in their production and their functioning are the indirect products of the laboratory.

Clover plots at the Grasslands Division, Plant Research Bureau.
[H. Drake, photo.

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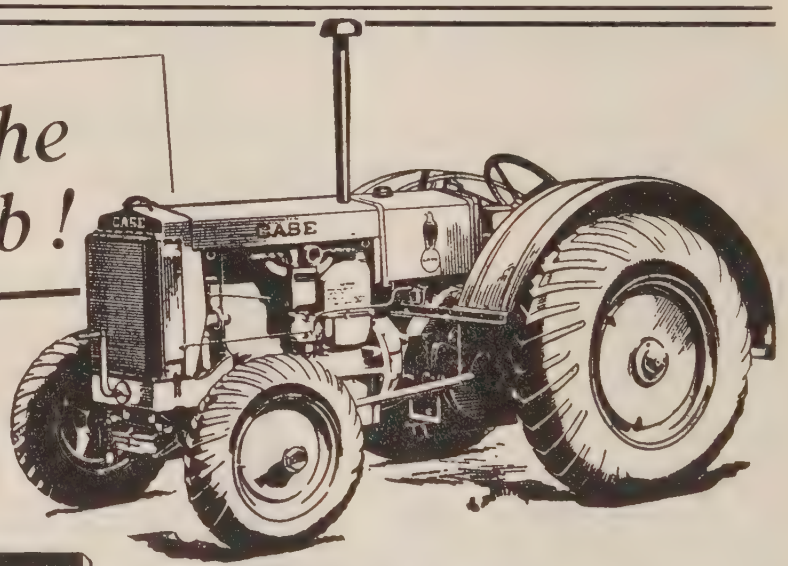

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The very homes in which we live are largely the indirect output of the scientist, and without his pioneering work modern buildings on the farm or elsewhere would not be available. Think for a moment of the importance of cement, of galvanised iron, of glass in such buildings.

Testing butter and cheese during grading. [*H. Drake, photo.*

Unlimited Examples

One could give an almost unlimited number of examples of the way in which modern life is influenced by, and is dependent upon, the scientist. He is constantly evolving new materials and new methods which are adopted by industry and soon become accepted as a matter of course. Many of us do not realise that the scientist has been almost entirely responsible for shaping the world as we know it today.

Let us now consider in greater detail some of the methods by which the scientist more directly influences our agriculture. It is difficult to know where to start, but to begin with we may consider a thing which greatly puzzled the ancients. It is possible to take a tub of soil, plant the seed of a tree in it, and, by adding nothing but water, produce a plant, the bulk and weight of which are many times greater than those of the soil in which it is rooted. What is the plant made of and how does it grow?

Testing seeds for germination at the Seed Testing Station, Palmerston North. [*H. Drake, photo.*

Careful scientific inquiry has supplied the answer. Today we have a full understanding, although not a complete knowledge, of plant growth and nutrition—important matters when we consider that all animal life, including that of ourselves, is dependent upon plant life. The scientist has discovered that the bulk of the plant is derived from the atmosphere, but that certain small quantities of minerals must be derived from the soil.

Essential Minerals

These minerals are essential to plant growth, and if not available in sufficient amounts the growth is limited or, as the farmer would say, the crop is a failure. The chemist and the plant physiologist have studied the mineral requirements of our plants. We know what substances are liable to be deficient in certain soils.

In New Zealand, as every farmer knows, we have a pronounced lack of phosphates, which we correct by applying phosphatic fertilisers—an every-day practice carried out by almost every farmer, who seldom pauses to think of the many years of scientific work which he calls to his aid when he applies superphosphate with his seed.

One hundredweight of this fertiliser contains some 20 lb. of phosphoric acid, and is applied to an acre of soil, the upper 6-inch layer of which weighs approximately two million pounds. What the farmer does when he drills one hundredweight of super

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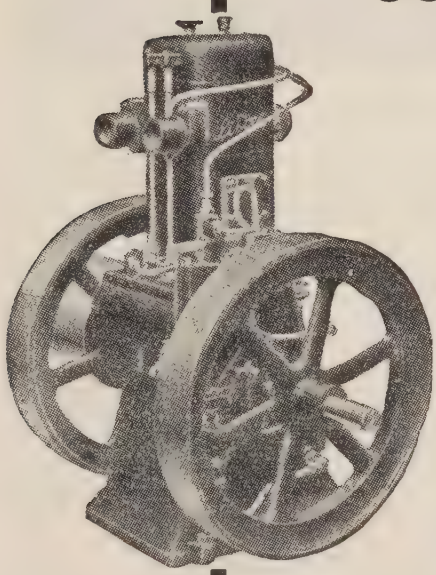

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per acre is to apply to the soil 10 parts per million of phosphoric acid. Those 10 parts often represent the difference between a good and a poor crop, and sometimes the difference between a good crop and no crop at all.

As with phosphates, so with many other plant foods. In some localities potash must be applied; in others, manganese. Cobalt may be lacking in another soil, and its deficiency is made evident in the losses which result among the animals grazed on such land. Borax is sometimes found to be necessary to ensure healthy plant growth. Only the scientist can solve the riddle of the deficient element.

Varied Work

The scientist does not work only in the laboratory. You will find him in the field conducting plot trials or examining the health, growth, and development of animals grazed on differentially treated areas. You may meet him in an office referring to statistics and examining records, pursuing every avenue which may lead to new knowledge. His tools of trade are not confined to the test tube and the microscope.

Taking meteorological readings at the Animal Research Station, Ruakura.
[H. Drake, photo.

Agriculture owes a great deal to the physicist, the scientist devoted to the study of matter and of energy. I have already referred to the influence of machines on modern life and modern methods of production. We are prone to give credit to the engineer for such machines, but behind the engineer is the physicist as well as the chemist. The engineer applies the knowledge gained by the scientist, just as in turn the farmer may use a tractor produced by the engineer.

To the physicist we owe our knowledge of hydraulics, which we use in our drainage schemes, in our water supplies, and in our irrigation projects. He also has given us refrigeration. His studies of centrifugal force led to the production of the cream separator and the milk and cream tester. He gives us our electric light and power, as well as the magneto or the induction coil which is an integral part of our petrol engines.

Benefit to Mankind

No physicist of even a century ago could possibly have foreseen the many ways in which the knowledge he was painstakingly acquiring has been of benefit to mankind. The true scientist is concerned primarily with the discovery of new knowledge. Its application is a secondary consideration about which he is not so vitally concerned.

Michael Faraday, one of the greatest of physicists, was one day working in his laboratory on what was a new discovery. He found that by turning a loop of wire in the space between two magnets an electric current was generated in the wire. At the time a lady visitor was being shown through the laboratory and Faraday, overflowing with enthusiasm, explained to her what had just been discovered. "Yes," said the lady, "but, Doctor, what is the use of it?" "Madam," replied Faraday, "what is the use of a baby?" Faraday's "baby" has grown into a husky adult. On his discovery is based the construction of the electrical equipment which is used so freely today.

The Botanist

The layman often imagines that the botanist is concerned only with the naming and classification of plants. That is but a small part of his work. Of much greater importance is his study of plant growth. The systematic production of new types of plants and the selection of improved strains is a comparatively recent but most important development following upon the publication of the work of Mendel and upon a fuller understanding of genetics.

The economic importance of applied botany would be difficult to overestimate. Practically all of the crop plants grown today are the result of carefully controlled breeding and selection. As an example, it may be mentioned that in New Zealand by far the greater part of our wheat crop is produced from seed selected or specially bred at Lincoln. The yields have been increased, and the quality improved. Similar work is

being done with a number of other crops and pasture plants.

The result of such work is that, without additional cultivation or extra manuring, the farmer harvests a bigger crop and one of better quality.

Crop Plants

Crop plants are subject to damage from various parasitic plants, especially fungi, and these low forms of plant life are liable to take a big toll. Their study forms the branch of botany known as mycology, and the mycologist contributes much to modern agricultural practice. In association with the plant breeder he produces resistant or immune varieties of crops. He has developed various steeps and dust which, if used on the seed, destroy the spores of the parasite. He has developed sprays and dusts for the direct control of other fungus parasites, and more recently he has undertaken an attack, as yet only partially successful, upon the newly recognised but widely distributed virus diseases of our cultivated plants.

The various branches of zoology have thrown light on many problems associated with our animals and plants. The entomologist wages war against what is probably mankind's most serious enemy—insects. He has studied their habits and their life histories, and selects the weak points for his attack. He has developed insecticides of various types—sheep dip is a case in point—and he introduces one insect to prey upon another. The introduction of a parasite for the white butterfly will suggest itself as a well-known recent example.

Parasites in Animals

The helminthologist devotes his attention to parasitic worms of various kinds, and in this branch of science steady progress is being made. Consider the story of the liver fluke, a parasitic worm which, fortunately, is not common in New Zealand, but which in the past resulted in large losses of sheep in other countries.

Only the painstaking scientist was able to master it, and first he had to understand its life history. The eggs of the worm, when voided by the sheep, do not re-infest another sheep. After hatching, the young worm proceeds to parasitise a water snail, in which it develops into a form different from its parent. Its young parasitise the sheep. By destroying the snail the disease of the sheep is controlled.

The few examples which I have brought to your notice may suffice to illustrate how dependent is modern agriculture upon the scientist. But the scientist cannot replace the farmer, and in some ways agriculture is not a science and never can be. It is an art.

Useful Handmaid

The farmer may call to his aid all the scientific knowledge and modern equipment available, but he can never standardise his methods or his work. He lives too close to Nature for that. He has to contend with an ever-changing set of conditions. The hand of the agricultural clock rotates but once a year, and never are conditions the same in any two seasons. So long as we have variation in rainfall and other seasonal conditions, just so long will the art of agriculture be of outstanding importance. Science will remain a useful handmaid, but will not be the master of the competent landsman.

(This article is an abridged version of a longer article.)

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Share-Milking Agreements Order

Alterations to Standard Terms And Conditions

A. E. MORRISON, Solicitor, Department of Agriculture.

THE PURPOSE of the Share-Milking Agreements Order, 1939, which came into operation on the 1st July, is to replace the standard terms and conditions of sharemilking agreements where the farmer-owner provides the herd as set out in the Schedule to the Share-Milking Agreements Act, 1937, by fresh standard terms and conditions set out in the Schedule to the Order, which standard terms and conditions have been agreed upon by the New Zealand Farmers' Union and the New Zealand Industrial Union of Workers.

The purpose of these notes is to set out the new matter contained in the Order under notice, and in this connection readers are referred to the notes on the Share-Milking Agreements Act, 1937, published last year in the April issue of the "Journal" on page 239.

The Order contains substantially the same provisions as were set out in the Schedule to the Act, and, in addition, the following new matter.

A sharemilker is not responsible for damage done by bulls or other wandering stock unless the damage was due to negligence on his part. The sharemilker must receive a half-share of the value of all calves valued as grades, including bobby-calves and pigs valued as grades, providing that the sharemilker buys in as grades.

Calves for Rearing

Calves for rearing for replacement purposes are not limited to 25 per cent. of the herd as formerly, the farm-owner being given authority to require more than 25 per cent. to be so reared, but replacement stock in excess of 25 per cent. of the herd may not be grazed on milking paddocks used by the sharemilker except by consent. Formerly a sharemilker was required to pay, among other things, one-third of depreciation calculated at the rate of 20 per cent. on the motor lorry supplied by the farm-owner for the purpose of conveying milk to the factory. Under the Order he now pays for depreciation at the rate of 5 per cent. per annum.

A farm-owner must supply adequate facilities for boiling water. Stumping, clearing, the erection of new fences, and the breaking in of rough farm land is the responsibility of the farm-owner, and is not included in general farm work which must be performed by the sharemilker. It should be noted that temporary subdivision fences must be erected by the sharemilker with materials provided by the farm-owner, but permanent subdivision fences must be erected and paid for by the farm-owner, who shall supply necessary material. Where drains exceed a length of one chain per cow milked the cost of cleaning the additional length of drains shall be borne equally by the sharemilker and the farmer.

Equipment

Milking plant and lorries are brought into the range of equipment in respect of which, if supplied by the sharemilker, he shall receive such additional amount as may be agreed upon for the value of such equipment as at the commencement of the season, and this amount must be paid in equal monthly instalments, but in no case shall the sharemilker receive less than 10 per cent. of the value of such equipment.

In any case where pedigree stock is raised a mutual agreement must be entered into between the farm-owner and the sharemilker for the purpose of recompensing the sharemilker for the extra cost incurred by him.

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Insurance

The farm-owner must during the continuation of any sharemilking agreement insure and keep insured the sharemilker and all workers employed by the farm-owner against any claims made under the Workers Compensation Act, 1922, and if required to do so he must produce to the sharemilker the policy of insurance and the receipts for premiums from time to time paid thereunder. If the farm-owner makes any default in carrying out this provision the sharemilker may effect the insurance or pay the premiums thereunder either in his own name or in the name of the farm-owner, and may recover from the farm-owner all disbursements incurred by him in effecting the policy or keeping it running.

The same obligation attaches to the sharemilker in respect of workers engaged by him, and the farm-owner has rights in this case similar to those possessed by the sharemilker in the case mentioned above.

A copy of the Order may be obtained on application to the Government Printer, Wellington, price 3d., plus postage 1d.

Dairy Industry Accounts Regulations

THE Dairy Industry Accounts Regulations, 1939, revoke and re-enact the Dairy Industry Accounts Regulations, 1936, with slight amendments which are deemed necessary to ensure greater uniformity in the methods of preparation of balance-sheets by dairy companies.

The Form of Director's Report prescribed by the regulations differs slightly from that prescribed by the former regulations in that information is now required as to the total amount of cream cartage costs incurred by suppliers individually, together with an estimation of the amount per pound of butterfat which this sum bears in relation to the total number of pounds of butterfat derived by the company from cream received from all sources.

This ensures that a fair comparison of pay-out and costs can be made as between companies which bear the whole of the cream cartage costs and companies which require their suppliers to bear in any way the whole or any part of cream cartage costs.

Full information and instructions on this matter are contained in the appendix to the Form of Director's Report set out in the regulations, entitled "Directions for Compilation of Director's Report." The instructions also state that any payment made to suppliers as interest or dividends on share capital shall not be included in the computation of the season-average pay-out per lb of butterfat.

The Form of Manufacturing and Marketing Account has also been slightly amended, and the directions for the compilation of the account have been considerably amplified. A clause has been added to the instructions relating to the compilation of the Appropriation Account dealing with the debiting of income tax to this account. Minor alterations have also been made to the form "Statement of Statistics."

Conditions for the Sale of Bird Lime

THE PURPOSE of the Bird Lime Regulations, 1939, serial No. 1939/77, which came into force on 6th July, is to regulate the sale and purchase of bird lime, which includes all substances of a similar nature to bird lime and the substance commonly known as green bird lime.

The regulations make it an offence to have in possession, sell, or purchase any bird lime, or to use bird lime for the purpose of capturing or attempting to capture birds, but do not apply to the possession, sale, purchase, or use of bird lime if held in possession for sale or sold to registered orchardists and purchased or held in possession for use or used by the latter solely for the purpose of preventing damage to fruit by insect pests or, in the case of green bird lime, by birds.

Every person who sells bird lime must effect the sale in the presence of a witness, and before delivery to the purchaser must enter particulars of the sale in the register kept as prescribed by the regulations, to which the purchaser and the witness must append their signatures. A sale and purchase of bird lime may be made by correspondence if the purchaser's signature is known to the vendor, or, if not known, is witnessed by a Justice of the Peace, a constable, or by some person whose signature is known to the vendor. In such a case the vendor must keep the letter ordering the bird lime, and must make reference to the letter in his register.

The vendor must allow his register to be inspected at all reasonable times by an officer of the police or of the Department of Agriculture, or the Department of Internal Affairs, or by any ranger appointed under the Animals Protection and Game Act, 1921-22.

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All Tops And No Potatoes

Points in Combating Fungous Disease

A. S. NASH, Instructor in Agriculture, Rangiora.

An Auckland Short Top plant which was dug when almost mature, showing the poor yield of tubers and the small potatoes at ground level.

OF ALL the crops of economic importance, the potato, more than any other needs constant culling for disease and foreign varieties if its cropping power and purity are to be maintained. When roguing crops at flowering time or shortly afterwards it is not uncommon to come across plants that are obviously off type, and yet they show no true signs of any of the virus diseases, such as leaf roll or mosaic.

Quite a number of off-types are caused by injury to the young plants during moulding, and often plants on the end of the rows look entirely different from the rest of the crop because they have been trodden on by the horses manoeuvring to turn. I have heard such plants described as suffering from "swingle tree blight."

In general appearance, the foliage of the plant is more open than normal, and there are often only one or two coarse haulms. The upper leaves curl, and the flowering stalk is elongated. The plant has a harsh straggly appearance, and stands out above the rest of the crop.

Complaint Prevalent

These straggly types have been prevalent throughout the crops, especially during the last two seasons, and my own observations and reference to American and other authorities has confirmed my suspicions that injury by the fungus *Rhizoctonia* is the chief cause of this complaint. Few seed potatoes are entirely free from small black spots on the skin. These spots range in size from one-eighth of an inch to anything up to a quarter of an inch, and they can be easily levered off with the finger nail.

Injury to almost mature potato plants is not always attributable to some form of mechanical damage. The Corticium fungus, which often accounts for "misses" and "deferred growth" in the early stages of development, may also cause symptoms in mature growth akin to that caused during moulding operations.

These spots, more correctly termed a "black scurf," are the resting stage of the fungus *Rhizoctonia*, known also as *Corticium* during another stage of its life. In the black scurf stage it is never a serious blemish, but when infected seed is planted the scurf develops into an active growth which will attack the young shoots near the growing points.

Low temperatures favour the fungus, and in a late spring the shoots emerge slowly and numbers are nipped off before they reach the surface. The damaged shoot branches below the injury, and the result is a late plant or, if the attack is severe, a complete miss in the row. Old setts dug up are found to have numbers of half-grown shoots coming from the eyes.

Extent of Injury

Injury is not confined to the young shoots, but under conditions favourable to the fungus healthy stems are attacked later just below ground level. Fine threads invade the conducting vessels of the stem and interfere with the

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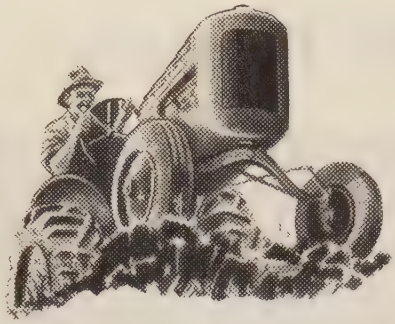

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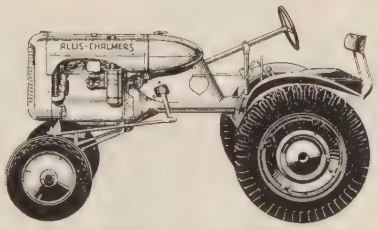

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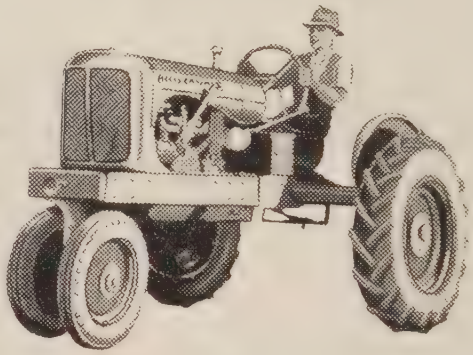

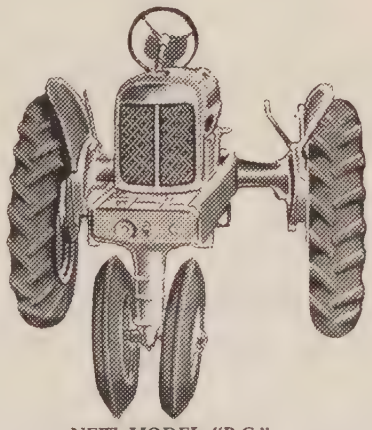

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Tons of strength but no excess weight. New streamlined design. Four forward speeds to conquer any going at pace. Does work of 5 horses. Replete with all Allis-Chalmers advancements. The ideal power investment for the 50 to 200 acre farms.

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transportation not only of sap coming from the roots to the leaves, but also of sugars passing down to the developing tubers. The top leaves show signs of wilting in hot weather, the condition being analogous to that caused by horses tramping on end plants.

The sugars manufactured in the leaves cannot reach the young tubers in the soil, and the reaction of the plant is to form small potatoes around the stem at ground level; sometimes they are found half-way up the stem in the axils of leaves. These tubers seldom develop to more than seed size, and are always very mis-shapen. Some authorities describe this phase of the disease as "All tops and no potatoes," or "Little Potato."

Rotational Cropping

The old advice to growers who rogue certified crops, "When in doubt, dig it out" is good advice, but it is of little avail to rid the stock of these plants as the fungus is carried on nearly all tubers and can also live in the ground. Past experiments have proved that with rotational cropping, allowing a spell of at least four years between successive potato crops, the fungus will die out in the soil. The black scurf on the seed can be killed by the use of disinfectants, such as formalin and corrosive sublimate, but the process is rather laborious for the average farmer and is applicable only to small lots.

Old customs usually have a scientific explanation if only one can discover it, and the success of the practice of planting seeds from light land on heavy land is no doubt partly due to the fact that such seed carries less *Rhizoctonia*. On light land there is less organic matter in the soil and therefore less fungoid growth.

To Avoid Loss

To avoid loss through misses, late plants, and "all tops and no potatoes"—

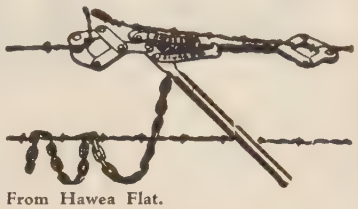
(1) Buy good clean seed, preferably off light land.

(2) Sow in a warm soil.

(3) Manure adequately in order to stimulate the plants in the early stages.

(4) Allow an interval of at least four years between successive crops.

HAYES' AUTOMATIC
(SMOOTH GRIP)
WIRE STRAINER
FOR BARB OR PLAIN WIRE.



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Plough rough, heavy land in quicker time and at record low cost with the R. & G. silver pattern single furrow Massive swamp Plough. Extraordinarily low-priced, yet constructed of specially toughened steel to withstand the most rigorous conditions. Lift equipment is heavier than usual, but operates with equal facility. Beams are of strong spring steel for greater strength, high for ample clearance. Write TO-DAY to your local Reid & Gray representative for full details of this money-saving R. & G. Massive Plough.

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BAYER'S DRY SEED DRESSING
(U.T. 1875 A) TRADE MARK

IS SUPREME

'CERESAN,' Bayer's Original Dry Seed Dressing, is the Premier Dry Seed Dressing on the New Zealand market.

'CERESAN' received further **official approval** in the statement published on the opposite page by The Director, Fields Division, Department of Agriculture.

This statement will be welcomed by New Zealand farmers for it completely dispels any erroneous impressions that may have been conveyed by the reports of tests as conducted by Wheat Research Institute and published in the press on June 23rd and 24th, 1939.

PLAY SAFE.
Always Sow

SEED

INCREASE YOUR YIELDS — PICKLE WITH 'CERESAN'

ORIGINALLY THE BEST
STILL THE BEST

BAYER

"CERESAN" IS BRITISH MADE

Mercurial Dusting of Seed Wheat

Effect On Germination

The germination capacity of properly conditioned seed wheat is not impaired by the use of mercurial seed treatments. Official tests show that, apart from the efficient control of "stinking smut," the use of mercurial dusts actually tends to improve the establishment of the crop.

—By—
R. B. TENNENT,
Director of the Fields Division,
Wellington.

CONSIDERABLE publicity has been given through the daily Press recently to a report purporting to emanate from the Wheat Research Institute to the effect that the use of a mercurial dust on seed wheat had adversely affected the germination of the seed.

In view of the recommendation of the Department of Agriculture that mercurial dusts could be used for treating seed wheat with perfect safety so far as their effect on germination was concerned, the evidence submitted in the above-mentioned report has caused much concern among wheat-growers. Since the publication of the report the whole position in regard to the effect of mercurial dust on germination has been thoroughly investigated, and the information derived therefrom should prove very reassuring to users of the mercurial dusts sold under the trade names of either "Ceresan" or "Agrosan."

Various Trials.

The following evidence has been compiled from the results of various trials conducted over a number of years in investigating the question of the suitability of mercurial dusts as seed treatments:—

(1.) Trial conducted by J. C. Neill, Field Mycologist, Department of Scientific and Industrial Research, and reported in the "Journal of Agriculture" for March, 1934. The report of this trial (in which several mercurial treatments were included) states that "in general, treated seeds showed slightly better results (that is, number of plants harvested per hundred seeds sown) than the untreated controls."

(2.) In the "Journal of Agricuclture" for May, 1934, J. C. Neill summarised the observations of field officers of this Division in regard to the efficiency of "Ceresan New" as a cereal dust. He concludes that "Cereal seed dusted with 'Ceresan New' showed better field germination than similar seed either untreated or treated by other commonly employed methods (that is, non-mercurial treatments)."

(3.) J. C. Neill, in the "Journal of Agriculture" for March, 1938, reported the results of a trial comparing untreated seed against seed treated with the then latest Agrosan and Ceresan products. The trial included lines of seed which had been dusted as long as four months before being sown. In no case did the use of either mercurial dust have any effect on germination as determined by the laboratory method. Further, dusted seed, when sown in the field, germinated in one instance equal to, and in all other instances better than, untreated seed sown under similar conditions.

(4.) The Plant Diseases Division of the Plant Research Bureau has at present in progress a trial designed to test out the latest mercurial dusts sold under the trade names of Agrosan and Ceresan respectively. An important feature of this trial is that seed wheats of varying moisture contents are under examination.

Interim Report.

Dr. G. H. Cunningham, Director of the Plant Diseases Division, in an interim report on this trial dated 30th June, 1939, states:—

"No injury occurred in laboratory trials (that is, using absorbent paper) when seed was germinated immediately after treatment. Germination was depressed in the laboratory in the samples held for a month before they were germinated, being most severe in samples with the highest moisture content, slight or absent in seed properly conditioned—that is, containing a moisture content of 12 to 13 per cent.

"No injury was noted in the field tests; on the contrary counts showed a slight increase in plant numbers in treated over untreated plots, irrespective as to whether 2 ounces or 4 ounces of dust had been used."

(5.) In regard to the trial and results reported to the Wheat Research Institute, the following facts have been ascertained: (a) The seed wheat ranged in moisture content from 14½ to 15½ per cent. (b) The seed was tested for germination by the usual laboratory method (using absorbent paper only). (c) The seed was tested for germination one month after dusting.

An analysis of the foregoing summaries indicates that there is not the discrepancy in results which appeared to exist before a complete examination of the position had been made.

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The statement given by Dr. Cunningham adequately confirms the reports previously issued by Mr. Neill in regard to field germination results, upon which the recommendations of the Department were based.

On the other hand, his statement in regard to results under laboratory testing are sufficiently in accord with those reported to the Wheat Research Institute as to indicate some detrimental effect on germination when the seeds are grown on absorbent paper.

Conclusions.

The following conclusions have been drawn from the evidence available:—

(1.) When germination is measured by the usual laboratory method where the seed is grown on absorbent paper, a reduced germination may be expected from seeds which have been treated with mercurial dusts. The depression recorded in such instances appears to be greater in the case of wheat with a high moistuse content, and practically negligible where the wheat has been thoroughly conditioned. No explanation for this depression has yet been advanced.

(2.) When germination is measured by the results obtained from sowing seed in the soil, no depression of germination has been recorded when comparison is made with the results obtained from untreated seed. On the contrary, there is sufficient evidence to suggest that the use of mercurial dusts for the treatment of seed wheat is likely to improve germination in the soil.

(3.) The mercurial products sold under the names Agrosan and Ceresan respectively do not differ in regard to their effect on the germination of seed wheat.

(4.) There is no evidence available to indicate what results may be expected when dusted wheat has been stored for periods of 12 months or longer. This aspect is at present under investigation, and in the meantime it is only possible to point to the fact that seed wheat dusted and held for four months has shown no adverse effects.

(5.) Where it is intended to hold wheat for a long period before sowing, it is advisable to defer treating such seed with mercurial dusts until at least a short period prior to sowing.

In conclusion, it is desired to emphasise that the Department of Agriculture is firmly of the opinion that mercurial dusts are the best form of treatment available for application to seed wheat.

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This photograph shows the "Giant" Disc at work on steep hillsides. It has brought in hundreds of acres of virgin land of all classes for its many users. The "Evona Giant" Disc has also proved remarkably effective on blackberry, scrub, ti-tree, tall-fescue, rank paspalum, fern, etc., doing up to 10 acres double cut virgin land in an 8-hour day. The "Evona Giant Chain" Harrow will clean up all rubbish, pull out loose timber, pull down any mounds, and fill up hollows. Work the two implements and you will have virgin land brought into a seed bed of fine even tilth. Note the deep cut when set is applied.

Importation of Stock

Scope of Amending Regulations

A. E. MORRISON, Solicitor, Department of Agriculture.

THE purpose of the Stock Importation Amending Regulations, 1939, enacted under the Stock Act, 1908, is to amend the principal regulations made under that Act on the 4th October, 1915, in the following manner.

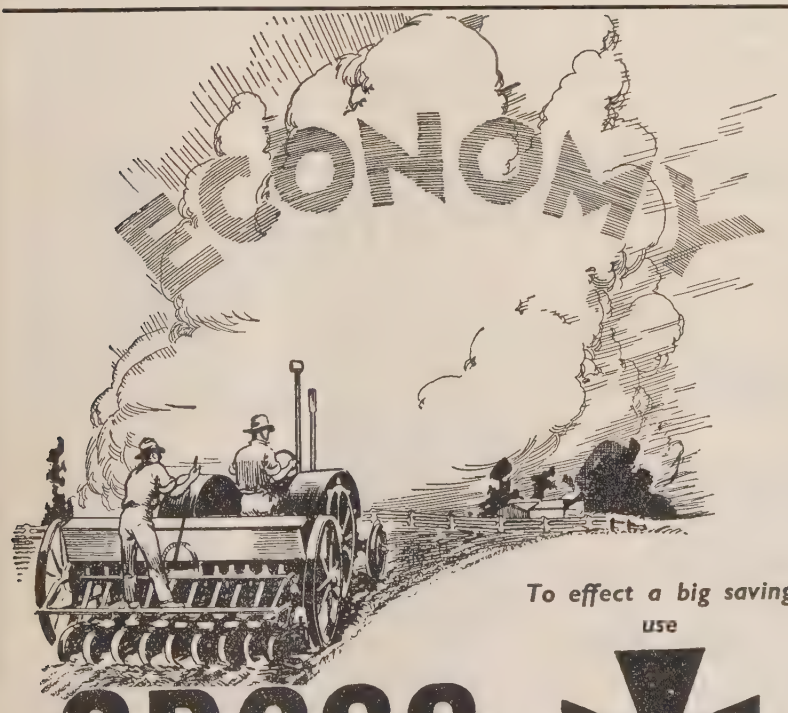
The regulations prohibit the introduction of horses, asses, and mules from the United States of America and Canada, and the introduction of asses from France, Spain, and Portugal, which was formerly permitted under the principal regulations. This action is necessitated by the incidence of a virus disease known as equine encephalomyelitis among horses in the United States of America and Canada, which has caused considerable mortality among horses in those countries, and by the prevalence of foot and mouth disease on the Continent of Europe.

The principal regulations have been further amended to permit horses, asses, and mules to be introduced into New Zealand from the United Kingdom and Eire without undergoing on arrival in New Zealand the Mallein test or the period of quarantine prescribed, provided that the animals are certified to be free from infectious and contagious diseases prior to shipment and are found on arrival in the Dominion to be free from disease.

The introduction of sheep from Canada is sanctioned by the regulations, provided a permit is issued by the Minister of Agriculture. Such sheep must be accompanied by a statutory declaration made by the shipper declaring (1) that they have been continuously in Canada for the three months immediately preceding shipment or from birth; and (2) that they have been during that period and are at the time of shipment free from all infectious and contagious diseases, and have not during the same period been in direct or indirect contact with any stock suffering from or infected with any infectious or contagious disease.

In addition, there must be inscribed on the declaration a certificate signed by a veterinarian in the employ of the Dominion Government of Canada certifying that he has examined the sheep within fourteen days prior to the date of shipment and found them free from all infectious or contagious diseases, and that during that period the sheep were dipped under his supervision in a sheep-dipping preparation approved by him.

The regulations also permit dogs from Australia to be landed at the port of New Plymouth in addition to the other ports specified in the principal regulations, and authorise the application of the Johnin test as well as the tuberculin test to cattle while they are in quarantine.



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Contributed by the DAIRY DIVISION

The following list includes particulars of certificates issued under the C.O.R. system during the first eight months of the present calendar year:—

Name of Cow and Class	Tested by	Age at Start of Test	Fat required for Certificate	Yield for Season		
				Days	Milk	Fat
FIRST CLASS						
Jerseys						
Junior Two-year-old.		Yrs. dys	lb.		lb.	lb.
Strathaven Caprice ..	G. B. Page, Leithfield ..	1 334	275.5	365	8,240.1	432.09
Senior Two-year-old.						
Coniston Violet	R. Waterhouse, Takanini	2 359	311.4	265	9,445.9	547.08
Canaan Duchess Peggy ..	S. Rinaldi, Box 30, Kaiapoi ..	2 218	297.3	365	6,047.6	316.05
Three-year-old.						
Derrys Superior Lass ..	E. R. Johnson, Mangapiko ..	3 67	318.7	365	10,901.8	554.03
Four-year-old.						
Meon Nehutai	M. N. Trotter, Katikati, B. of P.	4 117	360.2	365	14,789.5	888.20
Beechlands Flag's Queen	A. Moreland & Sons, Cambridge	4 363	384.8	365	13,178.7	698.84
Raithwaite Matchless ..	H. H. Buxton, Auroa, Waitara ..	4 28	351.3	365	6,898.4	448.35
Mature.						
Coniston Coy Marie ..	R. Waterhouse, Takanini	5 213	385.0	365	8,166.0	561.42
Milking Shorthorns						
Senior Four-year-old.						
Waimea Vanity	D. K. Buchanan, Waikanae ..	4 332	381.7	335	11,567.3	465.53
Mature.						
Waimea Dawn	D. K. Buchanan, Waikanae ..	9 58	385.0	365	12,346.2	492.94
Mereside Sweet Pea 6th	Est. W. Bowis, Doyleston, R.M.D.	6 15	385.0	365	11,147.1	428.23
SECOND CLASS						
Jersey						
Junior Two-year-old.						
Pinewoods Countess Sybil	G. H. Bell, Oakura	2 61	281.6	365	6,620.6	431.05
Helston La France's Gladys	J. T. Hill, Bunnythorpe	1 330	275.5	365	6,971.1	391.72
Helston La France's Jade	J. T. Hill, Bunnythorpe	1 337	275.5	365	7,182.2	390.31
Three-year-old.						
Premier Sweet Angel ..	W. Dunn & Sons, Waihou ..	3 338	345.8	365	14,860.1	817.33
Brookdell Frances ..	N. M. Colson, Waitoa	3 73	319.3	365	9,513.6	532.37
Four-year-old.						
Crofton Georgina's Gem	A. J. Luxton, Omata	4 62	354.7	365	8,756.9	572.15
Beechlands Double Flag	A. Moreland & Sons, Cambridge	4 106	359.1	334	8,899.6	405.07
Beechlands Fairy Melody	A. Moreland & Sons, Cambridge	4 111	359.6	365	8,119.1	401.46
Mature.						
Hatcliffe Golden Girl ..	J. E. Laing, Te Hoe, Ohinewai ..	7 43	385.0	365	10,156.9	625.35
Meon Kastro	J. & G. W. Dobson, Mountain Rd., Lepperton	7 7	385.0	365	11,313.0	606.57
Milking Shorthorn						
Junior Three-year-old.						
Horotiu Collette	R. D. Duxfield, Horotiu	3 4	312.4	364	8,742.3	376.62
Horotiu Lily	R. D. Duxfield, Horotiu	8 319	385.0	365	9,823.1	413.45
305 DAY—SECOND CLASS						
Ayrshire						
Four-year-old.						
Mahoe Highland Lady ..	Atkins Bros., Manakau	4 —	323.5	305	8,961.7	393.90

Farmers' Field Competitions

Results of Judging in Southland

A. STUART, Instructor in Agriculture, Invercargill.

THE JUDGING of the annual farmers' field crop competitions in Southland was completed in June. Entries this year totalled 38, consisting of 20 for swedes, four for turnips, and 14 for chou moellier. The standard of points allocated was one point for each ton to the nearest ton, plus husbandry (maximum 10 points), plus evenness (maximum 10 points), and quality (maximum 20 points). The final results were as follow:—

Swedes.

Mr. H. A. Robertson, Otautau	1
Mr. A. O. Fleming, Mabel	2
Mr. E. K. Sim, Pukemaori	3

Yellow Fleshed Turnips.

Mr. C. C. Munro, Mokotua	1
Mr. F. G. Clark, Wrights Bush	2
Mr. Robt. MacDonald, Drummond	3

Chou Moellier.

Messrs. A. and F. Christie, Mataura Island	1
Mr. Alex. Simpson, Mataura Island	2
Mr. P. A. Botting, Edendale	3

Winning Entries

Mr. Robertson's crop yielded 66 tons 2cwt. Nine points were awarded for husbandry, seven for evenness, and seventeen for quality, totalling 99 points. The crop was sown on November 10, and the seeding was 11½oz. per acre of Webb's Masterpiece. The crop was thinned where necessary and scuffled three times. Two hundredweight per acre of borated reverted phosphate was applied through the front box of the ridger, and 2cwt. of reverted phosphate through the back box. In addition, 10cwt. of burnt lime was broadcast one month before sowing.

Mr. Munro's crop yielded 41 tons 1cwt. Seven points were awarded for husbandry, seven for evenness, and seventeen for quality, totalling 72 points. Aberdeen Greentop and Aberdeen Purletop were sown, row about, at the rate of 8oz. per acre early in December. The crop was not thinned. The fertiliser used consisted of equal parts super, basic slag, and Seychelles guano at the rate of 3cwt. per acre.

Messrs. Christie's crop yielded 49 tons 18cwt. Nine points were awarded for husbandry, nine for evenness, and twelve for quality. The points totalled 80. The area was sown in mid-October with a seeding of 2lb per acre, and the crop was hand-thinned. Reverted phosphate at the rate of 1cwt. per acre was applied through the back box of the ridger, and equal parts of blood and bone and Seychelles guano were applied through the front box at the rate of 2cwt. per acre.

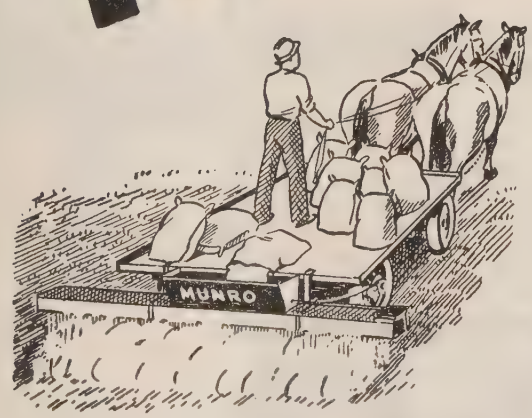
Comments

The season was not favourable for any of the crops mentioned. Rainfall was well above average in December and January, and was accompanied by blizzard conditions in the latter month.

1 Man does work of 8

and 3 ordinary Topdressers with the

Munro "Triumph":



. . . experience of Mr Kelly Caughey, Farmer, of Centre Bush, Southland. With his Munro "Triumph" attached to his horse lorry, on which he carries 3 tons of lime and super, he spreads, **without help**, as much in a day as he previously did with three drivers (working three machines), three mixers in shed, and two men carting out. The "Triumph" mixes and sows perfectly any two ingredients, or straight manure, or lime, or slag. An equally perfect grass seed sower—a three-in-one machine.

Easily attached to any wheeled vehicle: motor or horse lorry, wagon, dray, or trailer.

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resulting in crops being battered and almost ruined in many cases. Nevertheless, a remarkable recovery was experienced from February onwards.

With swedes, dry rot proved troublesome and was noticeable in all crops, some being badly infested. There is no doubt that a wet season results in the spread of this disease through the crop much more quickly than is the case in a normal season.

Brown heart was noticeable in a number of crops, but borax proved effective in checking this condition. Clubroot was not greatly in evidence, as practically without exception swede crops were grown on lea ground. Little damage was caused by aphis blight or diamond back moth this season, conditions being unfavourable for insect life.

The tendency to early flowering was particularly noticeable in chou moellier and also, in some cases, with swedes. This was purely a seasonal effect, as conditions in January were similar to winter and were followed by warmer conditions from February onwards such as would normally be obtained in early spring.

The winning crop of chou moellier.

Impurities, mainly charlock, were noted in several swede crops, but in most cases these had been removed by the farmer before the inspection of the crop. This aspect has been commented on in the "Journal of Agriculture" for January, 1939, p. 60, and seed merchants should watch closely the purity of imported lines.

In calculating yields in chou moellier it was found necessary to make deductions for moisture on the leaf, as there was a serious discrepancy up to as much as 9 per cent. by weight between dry and wet chou moellier.

More than the usual number of farmers had utilised their swede tops for lamb fattening, due to the poor growth of rape crops, and this weight was not allowed for in calculating the yield per acre.

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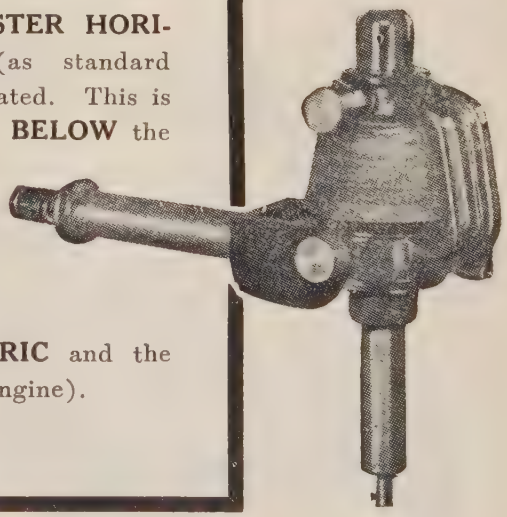
BOTH the **LISTER SHAFTING BRACKET** and **LISTER HORIZONTAL ELECTRIC BRACKET** are fitted (as standard equipment) with the **UNIQUE** Friction Arm illustrated. This is the only arm with ball bearings both **ABOVE** and **BELOW** the friction spindle.



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BRANCHES AND AGENCIES THROUGHOUT NEW ZEALAND

Lemon Marketing Regulations

Right of Purchase by Internal Marketing Division

A. E. MORRISON, Solicitor, Department of Agriculture.

THE PURPOSE of the Lemon Marketing Regulations, 1939, is to give to the Internal Marketing Division of the Primary Products Marketing Department the sole right to purchase for resale all lemons harvested in New Zealand on and after May 1, 1939, except lemons so harvested and sold by a producer to a consumer who purchases for his own use and takes delivery at the orchard occupied by the producer.

All lemons to be acquired by the Internal Marketing Division must be delivered loose-packed in strong wooden containers to the Division, or to such other place or places as are appointed and notified by the Minister of Marketing, for examination and classification according to grade.

Grading the Fruit

Within 10 days of the delivery of any lemons the Division is required to have the fruit classified and graded into the respective grades for lemons prescribed by the New Zealand-grown Fruit Regulations, 1938, for the purpose of determining the price to be paid. The grades for lemons prescribed by the New Zealand-grown Fruit Regulations, 1938, comprise extra-fancy grade, fancy grade, good grade, and small grade, but in addition to these grades the Lemon Marketing Regulations provide for the following additional classes of lemons:

(a) Peel lemons, being lemons affected with skin blemish not exceeding 33 1-3 per cent. of the surface of any one lemon, and of a size packing not more than a 150-count to the standard bushel case.

(b) Juice lemons, being lemons affected with skin blemish affecting more than 33 1-3 per cent. of the surface of any one lemon and of a size packing not more than a 319-count to the standard bushel case.

The Division may postpone the grading of any lemons which, in its opinion, require to be held for a further period in order that the appropriate grade may be correctly determined.

The Division reserves the right to fix the aggregate quantity of juice lemons which shall be taken from a producer at not more than 10 per cent. of the total quantity of lemons delivered to it by that producer, and also to reject certain classes of lemons which are unsuitable for marketing or for conversion into lemon peel or lemon juice.

Grades Allotted

Within two days of the grading of any lemons the Division must furnish to the producer by whom the lemons were delivered particulars in writing of the grades allotted to the lemons, the price payable for each grade, the total quantity of lemons comprised in each grade, and the quantity of lemons delivered by the producer, the grading of which has been postponed. This notification constitutes evidence of a debt due and owing by the Division to the producer in respect of such graded lemons, and payment must be made within 20 days from the date when such particulars were given.

The several prices payable by the Division for extra-fancy, fancy, good, and small-grade lemons delivered to and accepted by it are fixed on a measure-case basis. The measure case is a wooden case, the inside dimensions of which are 19½in long, 11in wide, and 12¾in deep, and which, when loose-packed with fresh lemons to a depth of 11¾in, will yield a three-quarter bushel case of cured and packed lemons.

Prices

The prices to be paid by the Division for the several grades of lemons are as follows:—

Extra-fancy, 6/9 per measure case.
Fancy, 5/3 per measure case.
Good, 4/5 per measure case.
Small, 4/5 per measure case.

Peel lemons affected with skin blemish not exceeding 10 per cent. of the surface of any one lemon, 1¼d per lb.

Peel lemons affected with skin blemish exceeding 10 per cent. but not exceeding 33 1-3 per cent. of the surface of any one lemon, 1d per lb.

Juice lemons, ½d per lb.

The Internal Marketing Division must destroy or otherwise dispose of all rejected lemons forming part of a consignment delivered by a producer, and the reasonable cost of such disposal or destruction shall be deducted from moneys due and payable by the Division to the producer in respect of accepted lemons. Any costs incurred by the Division other than grading charges, etc., in rendering suitable for marketing any lemons in a consignment which were improperly picked or badly packed, etc., by the producer may be deducted from moneys due and payable by the Division to the producer concerned.

Storage Charges

Seven days after the producer has received notification of the grades and prices payable in respect of lemons delivered by him to the Division he must remove from the premises where the grading of his lemons was carried out all the empty wooden lemon containers belonging to him. If the producer makes default in doing this the Division may charge storage thereon at such rates as it thinks fit and deduct these charges from moneys due and payable to the producer.

The Regulations empower the Minister of Marketing to appoint a committee, to be known as the Lemon Marketing Advisory Committee and consisting of not less than three nor more than five members. Appointment of members to this committee is made after the Minister has consulted the representative associations of producers in the lemon-growing districts of New Zealand. The function of the committee is to act in an advisory capacity to the Primary Products Marketing Department in respect of the administration of the Regulations and the marketing of lemons in New Zealand.

Veterinary Notes for the Farmer

Discussions on First-Aid Measures

Contributed by the Livestock Division

Zinc Poisoning in Pigs

A CASE of zinc poisoning in pigs occurred in a line of weaner pigs on a dairy farm where the pigs were mainly fed on the skim milk. Six young pigs were lost over a period of about a month, and three were ailing when seen, showing a certain stiffness and a tottering gait, with some swelling of the joints. Older pigs were not affected. In addition to these symptoms, the pigs were off their feed and generally unthrifty, and a post-mortem examination of one found dead showed secondary complications of the lungs and bowels.

The skim milk was pumped across to the pig yards from the milking shed, a distance of about a chain, through a galvanised iron pipe which had been renewed about three months previously. Two barrels were used for storing the milk at the yards, being filled alternately and kept fairly clean.

A sample of the curds and whey from these barrels contained .066 per cent. of zinc, which is of more than the minimum toxic strength, and a diagnosis of poisoning by zinc was confirmed.

Source of Poisoning

The milk being pumped through the pipe is fresh, but unless the pipe is thoroughly cleansed afterwards a certain amount will remain in the pipe and turn sour, the acid so formed attacking and dissolving the lining of the pipe. With the next flow of milk through, pieces of milk-scale containing the zinc compound are swept through and go into solution in the containers. Once the lining of the pipes has been eaten away and a rusty surface exposed to the milk, the pipes are no longer a danger.

In the case described, once the use of the pipe was discontinued the pigs started to pick up, being fed fresh milk and a small quantity of concentrates, which quickly restored their appetites and normal health.

It might be added that a number of ducks which also consumed the milk became lame, but recovered.

Precautions

After installing a new pipe for the conveyance of skim milk from the shed to the piggery it is advisable to pump water through the pipe each time before milking begins in order to remove any dissolved zinc which may be lying in the pipes. This washing out of the pipes appears necessary for the first season, and all washings must be discarded. It will assist in keeping the pipes clean and free from bacterial contamination.

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Redwater in Calves

IN THE dairying districts, particularly those of the South Auckland and Taranaki areas, a certain number of calves die each spring from redwater. So-called dietetic redwater occurs in cows before and after calving, and is usually associated with the feeding of excessive quantities of roots, or with the spring flush of grass, unbalanced by hay or other supplement. It is probable that in calves also diet is responsible. Some work done in Australia suggested that a certain type of bacterial infection was to blame, but this has not been confirmed elsewhere.

The occurrence of redwater in certain animals during the facial eczema epidemic of the 1938 autumn would indicate that in grass at a certain stage of growth there may be a substance capable of breaking down the red cells of the blood. In redwater of any type the red cells of the blood are broken down somewhere in the body, and the red colouring matter is got rid of through the kidney in the urine.

Calves may die at any age from one week, which is exceptional, up to six or eight weeks. Unless a post-mortem examination is made it is quite possible for several calves to die rather suddenly without the cause being suspected. If they are under close supervision the passage of discoloured urine, which may vary from bright red to port wine or almost black colour, may be noticed and give a clue to the trouble.

The conditions under which deaths occur have usually been that calves are doing well, are being well fed on whole or skim milk—there seems no record of its occurrence in whey-fed calves—are getting some meal concentrate, and have access to a grazing of rapidly growing type. Deaths may occur under other conditions, however, and in the absence of green feed, for example, very young calves. It is possible that the harmful substance is being eliminated by the cows in the milk itself. Some have considered that dirty, insanitary conditions were to blame, but the conditions may be good.

Symptoms

In most cases the affected calf continues to take its food. Within 24 to 48 hours of the onset it becomes weak and staggery, and the lining membranes of eyelids, nostrils, and mouth become pale. Breathing may be laboured. Changes in the urine, as described, occur. Death, in most cases, takes place in one to three days.

On post-mortem examination of a dead calf any urine found in the bladder will be characteristically dark red. The kidneys are usually very dark, particularly on surface, and sometimes swollen. The liver, on being cut open, is of a yellowish colour.

Treatment

Various treatments have been tried, and with varying success. Much depends on early recognition of the

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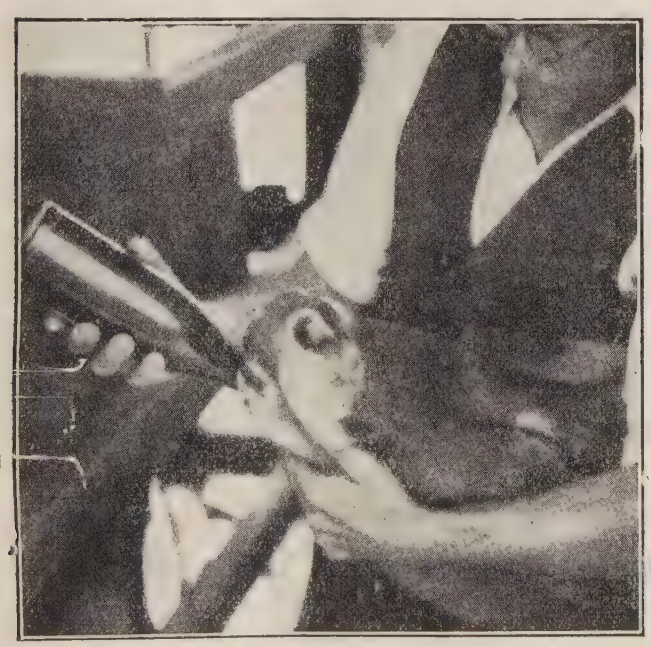

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PRICE: (In airtight tins) containing about 30 drenches per tin, £1-7-6; 15 drenches, 14/6; 7 drenches, 8/-. In packets, per dozen, 17/6. (These prices do not include freight.)

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trouble. The best results have been from the following procedure:—Carefully give a drench of 1 tablespoonful of common salt and 1 dessertspoonful of vegetable turpentine, thoroughly dissolved in 6 ounces of milk. Withhold milk for 24 hours, allowing frequent drinks of barley water or oatmeal water. Bring the calf back on to milk gradually, first half water, increasing the percentage of milk daily. Keep the calf warm and comfortable, and restrict exercise.

Another treatment, which gave strikingly good results in some cases and failed in others, was the giving of teaspoonful doses of sulphate of iron in a drench. Citrate of iron and ammonia, one-ounce doses of 6 per cent. solution, has also been tried, and is a useful tonic in the anaemia caused by redwater.

Control

Preventive measures are important, as the death rate may vary from one or two calves up to 20 or 30 in severe outbreaks. Where cases occur, grazing should be curtailed for a week or two, and a ration of good hay allowed if the calves are old enough. The milk should be properly rationed, and fed in separate buckets. A level teaspoonful of common salt should be added to each feed for a week or so.

Keep a close watch on all calves to detect early cases.

Redwater in Cattle

REDWATER in cattle derives its name from one of the most prominent symptoms exhibited by affected animals—a red colouration of the urine, the degree varying from a dark red to black coffee colour.

Redwater in cattle occurs in various countries throughout the world, being well known in the United States of America, South America, parts of South Africa, Great Britain, and Ireland.

The type of redwater to be found in these countries is due to the action of small microscopic parasites which invade the red blood cells or corpuscles. These parasites are called piroplasms, and the condition which they produce is known as piroplasmosis. Piroplasmosis is not known to occur in New Zealand, the type of redwater with which we are familiar in this country being of dietetic origin.

Although cases of redwater may be traced to cattle feeding on roughage in badly drained areas, the most frequent cause is associated with root feeding. Prolonged turnip feeding without allowing a supplementary ration of hay or turning cows on to roots which have been frosted may result in the appearance of the disease. Feeding on turnips or chou mollier on which second growth or seeding has appeared is a frequent cause of redwater, especially in cases where cows are coming near the calving period or in cows recently calved.

Symptoms

Affected animals may go off food before other symptoms are shown, but in the majority of cases the attention of the owner is first attracted by the fact that either one or several cows are passing red-coloured urine. Diarrhoea or constipation may be present, the animal showing symptoms of anaemia and depression. The heart beat is loud and easily felt.

Good results are obtained by early treatment, while in neglected cases the condition becomes serious, death supervening within a few days.

Treatment

Cattle should be removed immediately from the type of feed on which they have been when cases occurred, the amount of roots fed should be cut down, and the ration balanced by providing a supply of hay sprinkled with molasses. It is advisable to keep affected animals warm and as comfortable as possible. Nourishing food in the form of crushed oats and bran should prove beneficial.

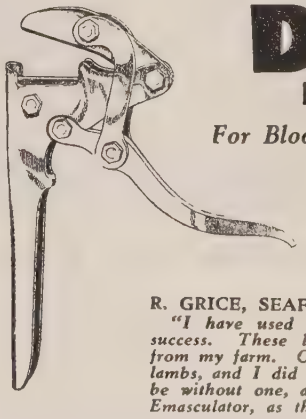
Where the animal has gone off food, oatmeal gruel could be given, or eggs and milk administered as a drench. Care must be exercised in drenching to prevent the fluid from entering the lungs and causing pneumonia.

A suitable drench for cattle suffering from this disease may be prepared as follows:—

Ordinary salt	½ lb.
Epsom salts	½ lb.
Powdered ginger	1 oz.

The drench should be mixed in a quart of warm water in which 2 lb. of molasses is mixed. It is not advisable to repeat this drench.

Plenty of water should be allowed for drinking, and if constipation still persists a pint of raw linseed oil should be given. Easily-digested food, such as bran mashes, will assist in overcoming the constipation.



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Answers to Correspondents

Concentrate for Cows

M.B.L. (KARIOI):—

1. Our turnip crop has failed, and although we should have enough hay and rough feed to see us through the winter we would like to give the cows a concentrate to counteract the binding effects of hay. Would bran or oilcake answer the purpose and, if so, what would be the minimum amount that could be fed to them, and should the bran be wet or dry? Or, could you advise any other grain or feed?

2. We are troubled sometimes when calves are very young in that they suck the water from the bull calves. Is there anything that could be rubbed on the place they suck, or is there any method of preventing this habit?

LIVESTOCK DIVISION:—

Either bran or oilcake may be used as a corrective to the hay in your ration, or you might use both with good results. The amounts I would suggest are 4lb of bran and 2lb of cake per cow per day. The bran should be damp sufficiently to prevent its blowing about. These foods are quite suitable if obtainable at a reasonable price

Molasses 1lb per day per cow on the hay is good, but more troublesome. A bale at a time should be soaked overnight in a tub of molasses and water one to four, or this solution may be poured over the hay in the stack daily for the next day's loading.

With regard to the calves, the sucking is a quite usual habit, and is sometimes overcome by more frequent feed and making sure that the animal is getting sufficient food altogether. An anti-sucking device, such as a piece of material placed over the muzzle (but not so as to hinder breathing) or segregation is better than putting unpalatable material on the animals which are being sucked.

Sometimes a little dry feed, such as bran, fed in a trough immediately after giving the milk, checks the tendency to such after-feeding.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

Correction

In an answer to a correspondent in this section last month on "Treatment with Cobalt," the weight of a fertiliser was wrongly given. In paragraph (4) it was stated that " . . . sheep remain healthy in cobalt-deficient areas where the pasture has been topdressed every autumn with five ounces of cobalt sulphate per ton of fertiliser." This should have read "six pounds of cobalt sulphate per ton of fertiliser."

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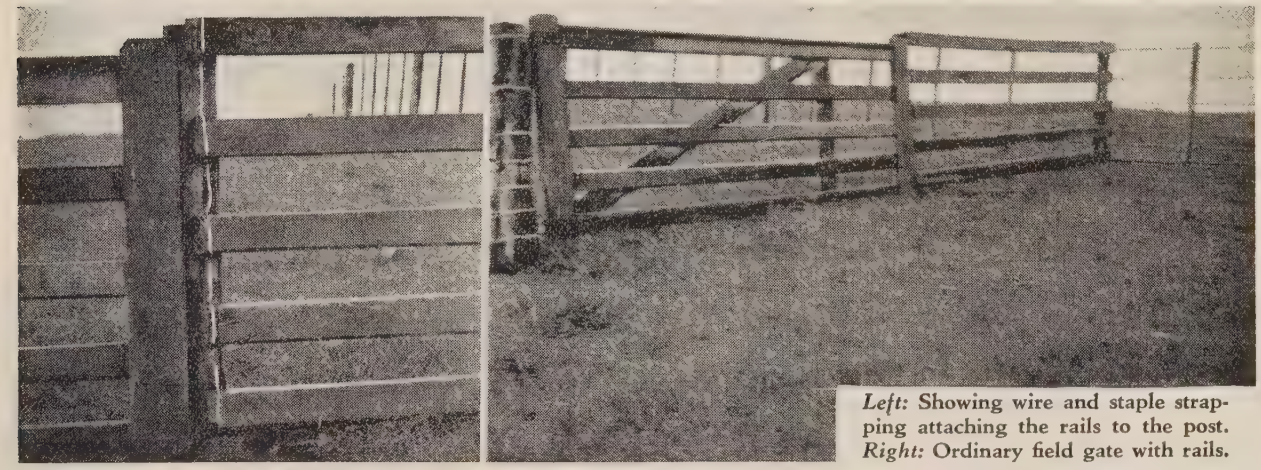
Farm Practice and Management

Contributed by Officers of the Fields Division

Solid Farm Gates and Rails



Left: Showing wire and staple strapping attaching the rails to the post. *Right:* Ordinary field gate with rails.

GOOD, substantial gates and good solid fences add to the appearance of a farm, improve the conditions for handling stock, and add value, far above their cost, to the resale price of a farm.

To reduce the cost of fencing many farmers skimp on the material to be used for gates or erect "Taranaki" gates built out of fencing material. These gates may work satisfactorily for a short period, but they soon become dilapidated, and much time is wasted struggling with pieces of wire, trying to manipulate the gate, or preventing stock from forcing their way through the unsatisfactory contrivance.

A good, solid gate built of sound timber, well stayed, and correctly hung, will prove stock-proof, is easily opened or closed, and will give service years after the "Taranaki" gate has become a wire entanglement and a menace to stock in the vicinity.

The practice of railing all gateways is an important item which is usually neglected. The railing of gateways greatly facilitates the handling of stock, especially bullocks. Stock will approach rails much more easily than they will a wire fence, and if a gate is in the corner of a field the stock are more likely to be bruised through milling in the confined space. If the gate is set out from the adjoining fence there is more room for stock and less

A much-used set of gates. Note the rails and different types of gate stays.

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Will not taint Milk
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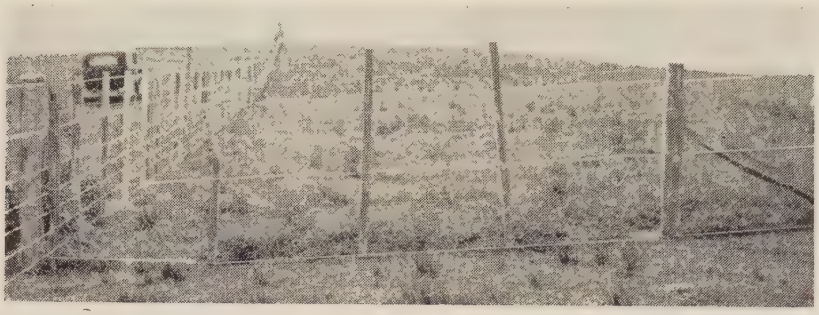

A "Taranaki" gate.

likelihood of damage to the stock or fences.

The illustrations are of rails 12 feet long. These are quite suitable for ordinary farm purposes, but where large mobs of bullocks are to be handled it would be advisable to have 30-foot rails.

—W. T. BROWN, Instructor in Agriculture, Hamilton.

Stimulation of Pastures by Superphosphate

SUPERPHOSPHATE is widely used in the Waikato, and its value is generally appreciated by farmers. Interesting results obtained from top-dressing trials at Ruakura this year have proved beyond doubt how much we owe to phosphate for the successful establishment and maintenance of high-producing pastures.

A new trial was laid down in March, the seed being sown evenly over the whole area. Manures were then applied at different rates. Until rain came at the end of April there was practically no sign of any seed germinating. After the rain, however, the plots receiving super came away well, while the plots not receiving super were poor in establishing.

Fig. 1.—A view of the plots showing (right to left) Plots 1 and 2.
E. R. Marryatt, photo.

Views of the Plots

Fig. 1 is a view of the plots. In the foreground is Plot 1, which received superphosphate at time of sowing. The next plot received no manure at all.

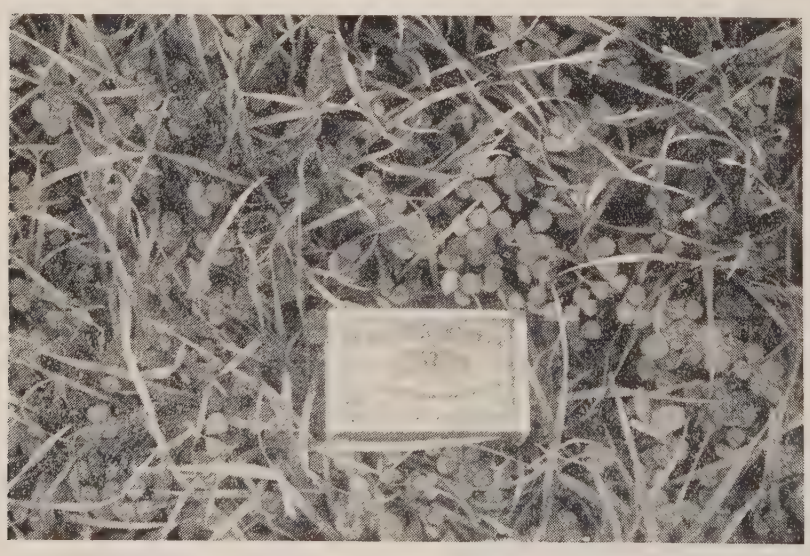

Fig. 2.—A close-up of Plot 1, showing good establishment due to superphosphate.
E. R. Marryatt, photo.

Fig. 2 is a close-up view of Plot 1, showing the dense growth of grass and clover. Fig. 3 is a close-up of Plot 2, which was sown at the same time, and with the same seeds mixture as Plot 1, but which received no manure.

The advantages of good establishment, such as is seen in Fig. 2, are not difficult to realise, especially in an autumn like the last one, when rain came so late that clovers had little chance of establishment before the cold weather set in. Obviously, the better the establishment before the winter, the better are the chances of the pasture in combating weed invasion in the early spring.

Again, if the clover is healthy and vigorous when growth stops in the winter it will be ready to begin vigorous growth in the spring, and the pasture will be capable of providing good spring feed. Poor establishment in the autumn means a poor, open sward in the winter, allowing for weed invasion and a poor growth of clover in the spring, which results in a weak

sward generally. An extra topdressing of superphosphate applied in the early spring is a good means of strengthening a new pasture which does not appear to be thriving very well.

Further Proof

Results of another trial have given further proof of the value of early autumn topdressing with superphosphate on established pastures. In the topdressing trials carried out at Ruakura the fertilisers were applied in March. Rain did not fall until nearly the end of April, and until the rain came there was little growth on any of the plots because of the very dry weather experienced. After the rain, however, the superphosphate plots came away very well, while the plots not receiving any fertiliser at all were fairly slow in coming away. When the plots were cut it was found that on one trial the increase due to super was 80 per cent., while on another trial the increase was 72 per cent.

These examples are sufficient to emphasise the importance of applying phosphate early in the autumn when sowing down new pasture or for topdressing old-established grassland. A dressing of 2 to 3 cwt. per acre should be applied. In addition, a dressing of 2 to 3 cwt. of superphosphate per acre in the first spring after sowing down will be a great help to a young pasture which is not as vigorous as it might be.

Fig. 3.—A close-up of Plot 2, which was sown without manure. Poor establishment has resulted.

E. R. Marryatt, photo.

—*A. C. BURGESS, Assistant Experimentalist, Animal Research Station, Ruakura.*

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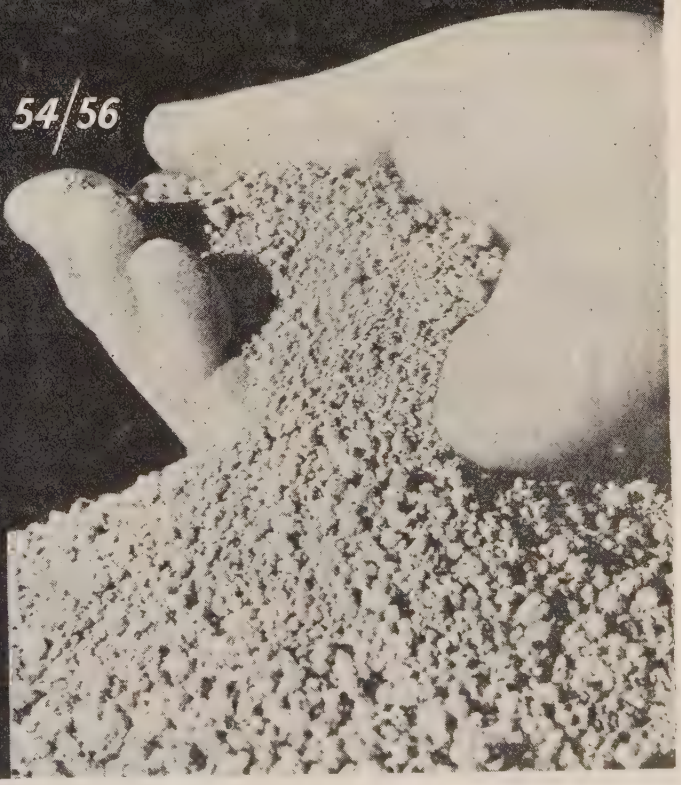
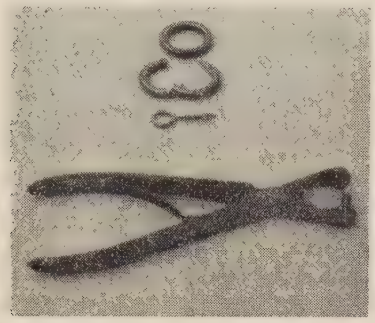
A dual purpose manure, especially designed for hand topdressing on hill country, and in our opinion is superior to "Hillside" Super for this purpose. It is higher in phosphates and finer in granulation, therefore a better and more even distribution is obtained with less wastage from rolling or washing down hillsides. KOTKUR is also a GENERAL PURPOSE manure and will readily flow through a topdresser. Especially suitable in high rainfall districts and on both swampy and peat soils.



Fixing a Nose Ring to a Sow

SOWS have an annoying habit of losing the ordinary type of nose ring shortly before they are due to farrow. They must then be bailed up and new rings placed in their snouts, or they will proceed to root up their paddock.

The ringing of sows heavy in pig is accompanied by some risk of losing the unborn litter, and a more permanent type of ring which does not get lost at an awkward time is needed.



The appliances used for fixing the ring.

A type of ring which has been found to be satisfactory is shown in the accompanying photograph, together with a nose punch for performing the simple operation of ringing the pig. The ring is simply a small copper ring of the pattern used for ringing bulls, and is placed in the pig's nose in exactly the same manner as in the nose of the bull.

The nose punch is first inserted into the nostrils, the septum pierced, and the ring then placed in position. The rings are self-piercing, and special pliers are obtainable (if desired) by which the ring can be made to pierce the septum instead of using the nose punch. The ring is kept closed by a small brass screw, and unless the pig gets hooked up and tears out the septum tissues the ring is there for life.

A number of sows at Ruakura have had rings fixed in the manner described and have not shown any inclination to root afterwards. The rings do not annoy the sows in any way when grazing, and are much neater in appearance than the ordinary type of pig ring.

A sow with nose ring in position.

—*C. E. BALLINGER, Assistant Experimentalist, Animal Research Station, Ruakura.*

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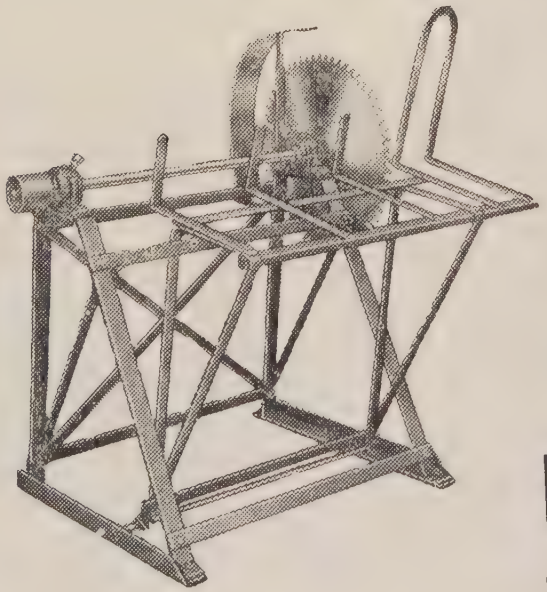

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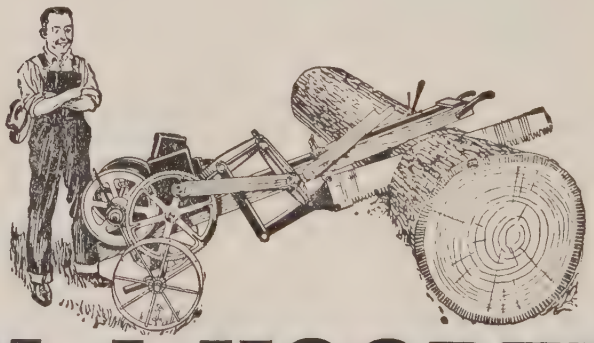

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Value Of Certified "Seed" Potatoes For The Farm Garden

ALTHOUGH the value of certified "seed" potatoes is fully realised by farmers who grow this crop on a fairly large scale as a cash crop, one often feels that there is a definite place for certified "seed" on the average farm where only sufficient potatoes are grown to fulfil part of the normal household requirements. On the great majority of farms there is usually the annual potato patch, and it has often occurred to me that many farmers are not getting the yields warranted by their efforts.

For instance, while visiting one farm two montns ago I noticed a crop of potatoes occupying about a quarter of an acre. On close inspection they proved to be heavily infested with virus disease, and when the roots were dug the potatoes were very small and the crop very light. The farmer told me that he kept his own "seed" every year, and had never heard of certified "seed."

Such instances are quite common. Quite often the smallest-sized potatoes are kept for the next season's seed, with the result that the crop is usually light. Even if medium-sized seed is kept, there is seldom any roguing done. In the warmer dairying districts of the North Island a line of seed tends to run out rapidly, and conditions favour the rapid spread of virus disease.

In these circumstances there is a definite place for the use of certified "seed" on the dairy farm potato patch. They are produced in districts suited to the production of healthy seed, and have to attain a certain standard of freedom from disease before the Department of Agriculture will certify them. They are procurable from any merchant, and the slightly higher price paid for them will be more than covered by the increased yield.

Three farmers whom I know in the Bay of Plenty were persuaded to test some of their own seed against certified seed of the same variety, and in all cases the certified seed gave at least double the crop. They intend sowing certified seed in the future, and have also converted some of their neighbours.

It is usually advisable to obtain a fresh lot of certified seed every second year. Seed kept from a certified crop should be all right for one year, but should then be discarded and fresh seed purchased.

—A. V. ALLO, Instructor in Agriculture, Tauranga.

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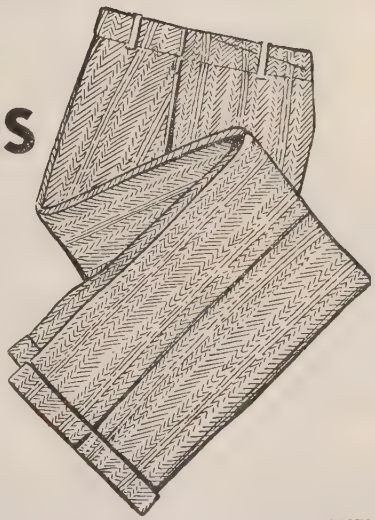

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Field Inspection Fees For Seed Potato Certification

IN order that the costs of seed potato certification may be more equitably distributed between Department and farmer it has been decided to increase the fees payable by growers in connection with the field inspection of potato areas under certification.

Commencing with the coming season, a field inspection fee will be levied at the rate of 5s. per acre, with a minimum fee of 10s. No alteration is proposed in connection with the sample trial fee of 10s. which covers the collection and testing out of the samples of the various lines entered for certification.

In view of the undoubted benefits arising to the grower of certified seed potatoes this increased charge is by no means prohibitive.

—Fields Division.

Via

K. P.

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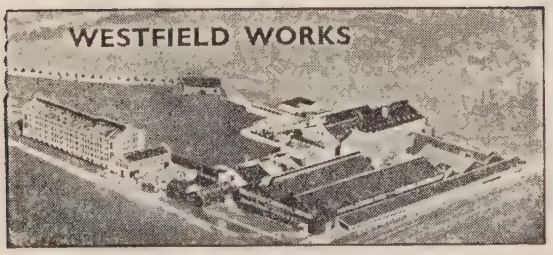

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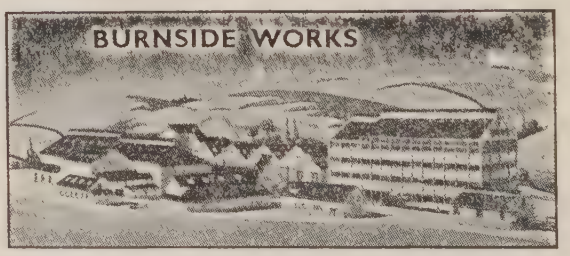

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Manurial Responses in Marlborough

THAT Marlborough farmers are rapidly realising the value of manures and lime is shown by the ever-increasing amount being applied in the district. It is true that, when compared with other provinces, the total amount used annually is still small, but there is every indication that largely increased quantities will be applied in future.

One of the most reliable signs is the interest being taken in response to manures. In many cases manured paddocks will be found with unmanured strips, and farmers' experiments of this type are often a valuable guide.

Some of these responses have been outstanding, and many of them come from districts where the popular idea has been that manuring gives no response, thus making the results even more valuable.

Fig. 1.

The accompanying photographs were secured this season, and cover a varying range of soil types and crops. Some are the results of departmental experiments with manure, but most have been observed on farms where the farmers either left a strip, ran out of manure, or decided to desist.

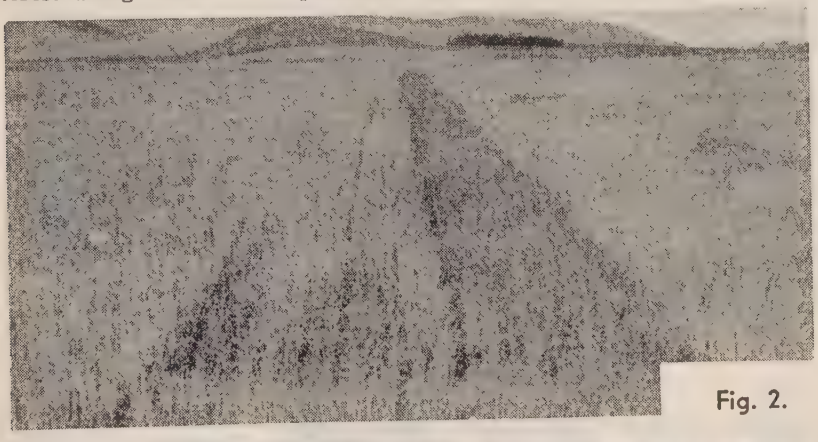

Fig. 2.

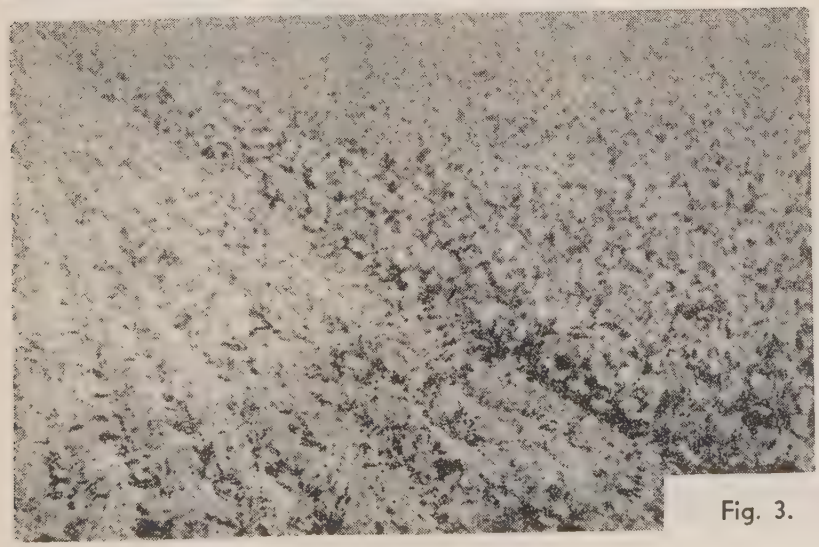

Fig. 3.

Illustrations Explained

Fig. 1 shows a crop of barley at Messrs. Ryan Bros., Seddon, where one drill-strip was left without manure. At the time of taking the photograph the unmanured portion was short, green, and sparse, while the rest of the paddock was tall, in head, and abundant. The manure sown was superphosphate at the rate of 1¼ cwt. an acre.

Fig. 2 is a comprehensive view of the same strip as that in Fig. 1 which does not show the relative heights but depicts how the drill neglected to sow on the first few feet of the next drill width and the results therefrom.

Fig. 3 shows rape with and without superphosphate on the farm of Mr. A. Smith, Seddon. Here, only eight rounds of the paddock were sown with

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manure. The difference was so marked throughout the paddock that it was said it would appear that they had knocked off sowing for a month.

Fig. 4 shows a stand of lucerne, a plant which responds generously to applications of lime. This is demonstrated effectively on the farm of Mr. W. G. Andrews, Seddon. The photograph shows lucerne dressed with half-ton of carbonate of lime (in the foreground), while the area in the centre was missed in sowing.

Fig. 5 illustrates that oats also show a decided increase. In the paddock in the photograph manure was being sown with the crop, but the supply ran out. The last coulter to which the manure ran can be clearly seen. Another notable feature was the decided liking of the sheep for the manured portion when it came to grazing. The photograph was taken on Mr. J. B. Laidlaw's farm, Fairhall.

Conclusion

It can be seen that some of the responses from manure this season in Marlborough have been remarkable. This occurred despite dry spells and similar occurrences. It may be said with assurance that, such are the increases being experienced by most users of manure and lime, that larger topdressing programmes will be the rule in the coming season.

—D. R. WILKIE, Instructor in Agriculture, Blenheim.

Fig. 4.

Fig. 5.

Management And Weed Control

A STRIKING illustration of the relation of continual close cutting to flat weed content of pasture was noted recently on a country golf course. The green illustrated has been prepared by merely rolling and mowing an area of an ordinary grazing paddock, but its limits have become clearly defined by the density of the daisies present.

The point to be noted by the farmer is that severe defoliation of plants with upright stems and leaves, either by mowing or continual close cropping with stock, gives an opportunity for plants with flat leaves to become dominant. Conversely, if such an area was never cut closer than, say, two inches in height, the daisies would rapidly disappear

—N. LAMONT, Instructor in Agriculture, Masterton.

How Seed Is Spread By Stock

IT IS generally understood that stock can do a great deal in spreading the seeds of various species from one place to another. Very often we are concerned with the introduction of weeds into pastures by this means, but at the same time desirable species can be carried and "sown"—under very favourable circumstances—to the benefit of the sward.

The illustration shows a magnified photograph of a sheep dropping which must have contained many hundreds of white and suckling clover seeds, which have freely germinated and which will be a valuable addition to the poor, open sward where the specimen was found.

—N. LAMONT, Instructor in Agriculture, Masterton.

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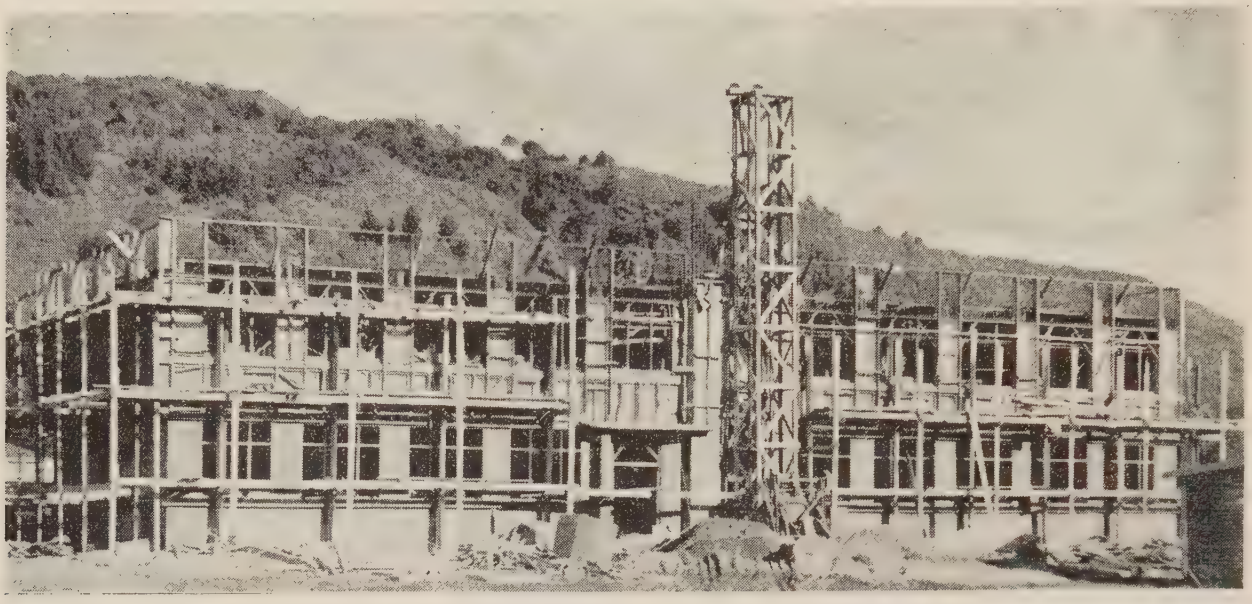

CONSIDERABLE progress is being made with the new Animal Research Laboratory of the Department of Agriculture at Wallaceville, as is shown in the accompanying photograph. The building, as planned, will be two storeys in height with a flat roof, upon which will be constructed two staff rooms. A central stairway will connect the roof with the two floors.

The ground floor has a kitchen suite for the preparation of media and the sterilisation of glassware, hot and cold rooms, a large post-mortem chamber, offices, and several laboratory rooms. On the first floor a small library will hold the more valuable journals and text-books, while the main space will be devoted to nutrition work in its relation to disease of stock. Here, experimental rat colonies will be kept, and a staff of chemists will work on various phases of disease problems. An up-to-date photographic studio is a feature of the floor, for it is desired to keep photographic records of experimental animals.

The building now in use will still be devoted to diagnostic work for the Department and the farming public. It is expected that the new building, which is now about to be faced with brick, will be finished before the New Year.

—*C. S. M. HOPKIRK, Officer-in-Charge, Animal Research Station Wallaceville.*

Eradication of Penny Royal

C.C. (PUKEKOHE):—

This year a lot of penny royal has appeared in the lawn. Sulphate of ammonia applied at the rate of one ounce to the square yard seems to check the growth, but will it get rid of the weed permanently? What should be done to eradicate this weed?

FIELDS DIVISION:—

Lawns badly infested with penny royal can be cleared up by spraying the lawn with a solution of 1/180 of arsenic pentoxide. The spray should only be applied when the foliage on the lawn is dry. The area to be sprayed should be divided into strips about 4ft wide, using binder twine for the purpose. Uneven distribution of the spray must be guarded against, and care should be taken to see that the area in close proximity to the string does not receive a double dose.

Penny royal can also be checked by applications of super, sulphate of ammonia, and finely-ground sulphate of iron applied evently at the rate of 1½oz per square yard. Apply super 3 parts, sulphate of ammonia 4 parts, and sulphate of iron 1 part. These applications should be made in the autumn and in September.

I suggest that you try the above top-dressing, and if it does not clear out the weed, then, after giving the lawn a spell, try the arsenic pentoxide.

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Horticultural Instruction

Contributed by Officers of the Horticulture Division

Orchard Notes

Preparations for Spring Work

SUCCESS in commercial fruit-growing should be measured by the orchardist's ability to increase substantially the production of quality fruit consistent with prudent expenditure on capital improvements and orchard maintenance, and at the same time to reduce the cost of production per unit, which, in this instance, may be the bushel case of fruit.

Orchard Records

To measure accurately the results of any business undertaking, books of accounts are indispensable, and this applies in no less a degree to any farming undertaking. Every orchardist should keep accurate orchard records which will give not only a complete statement of expenditure covering every part of the work, but also records of production and receipts, and records of spraying and manurial treatment and results.

With a new season's operations just beginning, one might resolve to keep more detailed orchard records. It should not be long before some important facts become evident. Questions such as the following may readily be answered. Is my production per acre up to the district's average? If not, do I spend sufficient on fertilisers, or is drainage at fault? Is cultivation adequate, or do I attempt to cut down costs to the detriment of the orchard? Are my grading results satisfactory when compared with district averages? If not, where is the weakness?

Analyse Crop Results

Besides keeping such detailed records as suggested it pays to analyse crop results and discover the main causes for reject fruit. It may point to weaknesses in the spraying programme, or perhaps something lacking in the actual application of the sprays. How many gallons of spray per tree do I apply? Is it below the average for comparable orchards in the district? Do I secure adequate coverage?

With adequate records, all such questions should be answerable.

Above all, the orchardist should put himself in such a position that he may arrive at an accurate cost per bushel of marketable fruit produced, and then strive by various measures to improve production and lessen costs per unit, thereby helping to raise the general standard of fruit production in the Dominion.

Reducing Costs per Unit

From investigations already made it is evident that in any district the cost per bushel decreases as production per acre increases. This is sufficient evidence that wise expenditure on orchard maintenance, designed to increase production, is a good investment and will return a profit.

Soil Conditions and Drainage

Assuming that orchards have been established in areas where the climate is suitable for fruit-growing, high production is attainable (1) only when trees are provided with a suitable environment in the first place, (2) when plant food, if at all deficient, is provided artificially, and (3) when trees and fruit are protected against damage from insect pests and fungous diseases.

Fruit trees will not tolerate stagnant water at the roots, and so require good drainage for maximum results. In new plantings one should avoid areas with a high water table, and should select for an orchard site only land which is definitely known to have ample natural drainage. Apart from the actual loss of trees through sour-sap, which is caused by water lodging around the roots, many trees on flat, rich country remain in a stagnant condition through root injury and inability to send down a deep-rooting system because of the high water level existing over long periods each year.

Tile Drains

Much may be done to improve such areas by making use of every inch of what fall may exist and providing a good, open drain into which may be led tile drains at such intervals as would be required according to the nature of the subsoil. The spacing of the tile drains may vary as much as one every alternate row to one every eight. Once the water table has been lowered by drainage the rooting system will extend downwards, and trees in a more or less stagnant condition will recover and expand.

Soils which become abnormally dry through having a shingle subsoil are not recommended for fruit trees, as serious loss of soil moisture in the summer is almost as damaging as having too much water, although the position might be rectified to a large extent by a sprinkling system of irrigation. This adds greatly to orchard costs, and it has been proved less

costly to become established on more fertile land.

Application of Fertiliser

The making up of soil deficiencies by the application of fertilisers was discussed in last month's notes. It should be sufficient merely to add that, with the exception of very rich areas, a complete fertiliser is necessary for most fruit lands, and that nitrogen is the most essential plant food generally, but that maximum results are secured when phosphoric acid and potash are supplied as well.

If there is any question of economising in fertilisers it would be unwise to leave out any ingredient in treating coloured varieties. Potash may not give such spectacular results on green varieties when considered on the basis of grading results according to our grading standards, but with coloured varieties, stimulated by the use of nitrogen and phosphoric acid, potash is essential to maintain a reasonable proportion of higher grade fruit based on colour.

Time of Application

With the exception of the very soluble chemical nitrogenous fertilisers, which should be applied when the buds are breaking and worked in immediately to avoid loss of ammonia, the other slower-acting fertilisers should be applied as early as possible and ploughed in.

All plants, including fruit trees, require a liberal supply of organic matter in the soil for optimum results. The part played by such decaying vegetable matter, or humus, is to improve the texture of clay soils, to increase the moisture-retaining properties of lighter soils, and to encourage the growth of the micro-organisms which are so necessary for all plant growth. This suggests the necessity for providing, in most instances, cover crops for ploughing in. This could be a matter for discussion later, but it must be considered in the general management of the orchard area.

Conserving Moisture

Having provided everything possible for maximum tree growth, the major efforts throughout the whole growing season must be directed towards securing control of all pests and diseases affecting fruit trees and in conserving soil moisture by providing a good tilth over the whole orchard area, thus guarding against any condition which should retard growth.

Disease Control

Spraying for the control of disease is a major orchard operation, and the whole success of the orchard undertaking depends on disease control. The work is facilitated by suitable equipment, which should be adequate for the size of orchard. Good spraying, which means thoroughness in application, is more likely to be achieved where the pump is of sufficient capacity to give a good volume of spray under good pressure, especially where trees are large, for otherwise the essential time required to wet every tree part thoroughly is not always given.

Where pressure is low and spray volume is poor, considerably more time must be taken over the work, as gallons per tree count very considerably. Better work is done with less liability to fruit and foliage injury by using materials at a greater dilution and increasing the gallonage at each application. This is the general trend in spraying practice.

Spraying Schedule

In last month's notes early spraying of stone fruit trees was discussed. Sprays recommended were an application of winter-oil in the dormant stage to destroy scale insects and red mite eggs, followed by an application of Bordeaux mixture 5-4-50 when the blossom buds are swelling for the purpose of preventing fungous diseases, including peach leaf-curl.

In most instances this spray should be applied by mid-August. In some localities and in certain varieties, however, it is not yet too late to obtain results. In any case, it is advisable to apply the Bordeaux mixture even if blossoms are almost breaking rather than to leave out the spray, even though it be too late to secure complete control.

In addition to the Bordeaux mixture applied at the recommended period it is an advantage to be able to apply at the "pink" stage of blossom-bud development lime-sulphur 1-200 plus 2lb. colloidal-sulphur to 100 gallons for the purpose of controlling brown rot of blossom buds. Control of disease at such an early stage minimises the trouble later in the season when, under humid conditions, brown rot in fruit will normally occur.

Spraying Apples and Pears

Apple and pear trees may require treatment for scale insects, mealy bug, and red mite eggs. For the control of scale insects and the minimising of trouble from red mite early in the growing season, winter-oil at a strength of 1-20 may be necessary, depending entirely on the presence of such insects on the trees. When San Jose scale is present a thorough application is very important. In the absence of any scale insects the use of winter-oil for red mite control would depend entirely on the extent to which eggs have been deposited during the previous autumn.

Under average conditions a heavy deposit of red mite eggs would cause a severe attack in the early summer months, when control measures cannot readily be adopted without interfering with the general programme of spraying for the control of fungous diseases. Winter-oil should be applied to pip fruits before there is any movement in buds; otherwise damage may occur which will affect the fruit crop.

—N. J. ADAMSON, District Supervisor, Nelson.

Viticulture

Phylloxera—Resistant Stocks

(Continued from July issue).

THE Solonis x Riparia 1616 (Couderc) stock was produced by Monsieur Couderc with the object of obtaining a stock having the characteristics of the Solonis with a greater resistance to phylloxera on Solonis and other soils (see February, 1939, issue of the "Journal"). It supports up to 25 per cent. of calcaire, and its tolerance for alkali is greater than that of most stocks. It is the most

suitable stock for land reclaimed from the sea and containing some sea salt.

In the New Zealand State Vineyards at Te Kauwhata, with a subsoil of tenacious clay, it induces heavy cropping. In a block of Cabernet Sauvignon, grafted some 20 years ago on a dozen different stocks and growing in the wettest part of the block, its scion wood produces the heaviest crops.

Mr. R. L. Nougaret informs us that as a result of experiments with the 1616 it has proved to be immune to the attacks of eel-worm. This is not a very usual pest of vine roots in this country, but it is reported by my predecessor, Mr. F. A. Anderson, as destroying ungrafted vines under glass in Christchurch some years ago.

The 1616 is more vigorous than its parent, the Solonis. The shoots are longer and stronger, and covered with small hairs. There are fewer laterals. The leaves have something of both parents. The teeth are long and pointed, characteristic in this respect. The lower surface of the leaves is hairy, while the upper surface is glossy, dark green, and undulating. The petiolar sinus is very open. The young leaves are pale green, and the tips of the shoots white and downy.

Vines grafted on 1616 are vigorous, and produce heavy crops of early-ripening grapes, and this under conditions where other stocks are at a disadvantage.

(To be continued).

—J. C. WOODFIN, Vine and Wine Instructor, Te Kauwhata.

Citrus Notes

Packing Fruit and Cultivation

TOWARDS the end of August, when these citrus notes appear, will be a busy period for most citrus growers, for not only will the harvesting of lemons be at the peak period, but New Zealand grapefruit and navel oranges will be maturing and spring cultivation operations will be beginning.

All coloured lemons should be picked from the trees at this period so that a good setting of spring blossom will be obtained. Many fruits may be frosted because of the severe weather experienced in July. These fruits should all be picked and forwarded as juice grade lemons only, as they cannot be expected to be cured and marketed as cured fruit because of frost damage resulting in loss of juice. Severely-frosted trees should be pruned as soon as possible in the spring. The sooner this pruning is done the more readily will trees recover.

Packing Fruit

From the first of next month the marketing of New Zealand grapefruit may be started. Prior to this date it is generally agreed that the Poorman orange is a marmalade fruit, but with the warmer spring weather this fruit becomes more palatable and has a growing public demand. For the benefit of growers who formerly forwarded fruit to a central depot and are now packing their own grapefruit, the following packing chart should prove of value.

PACKING CHART FOR POORMAN ORANGES AND N.Z. GRAPEFRUIT.

Style Crosswise.	Number in Rows Lengthwise	Number of Layers	Count	Sizes	Wrapping Paper
2 — 2	3 — 3	5	60	3⅞	11 x 11
2 — 2	4 — 3	5	70	3¼	,,
2 — 2	4 — 4	5	80	3⅛	,,
2 — 2	5 — 4	5	90	3	,,
2 — 2	5 — 5	5	100	2⅞	10 x 10
2 — 2	6 — 5	5	110	2¾	,,
3 — 2	4 — 4	6	120	2⅝	,,
3 — 2	5 — 4	6	135	2½	,,
3 — 2	5 — 5	6	150	2⅜	,,
3 — 2	6 — 5	6	165	2¼	9 x 9
3 — 3	6 — 6	6	180	2¼	,,
3 — 3	7 — 6	6	195	2⅛	,,
3 — 3	5 — 5	7	210	2	,,

HOW TO BRAND CASES

Bottom left-hand corner—
Name
Address
(not less than ½in. block type)
Reg. No.
(not less than ⅜in. block type)

Bottom right-hand corner—
Poorman Oranges
Grade ———
Count ———
(not less than ⅜in. block type)

The picking of navel oranges begins with early spring. Here again the test is the sugar content, or palatability, of the fruit. Do not place on the market immature fruit, as the sugar content does not increase after picking, although colour may be altered by artificial means.

Cultivation

Cultivation should begin in most groves unless weather conditions prove too unfavourable. A good start in the spring gives a grower a tremendous advantage with the yearly programme. One thorough ploughing annually is of value on most groves, and green manure, such as cover crops of blue lupins, oats, mustard, or field peas, should be turned in. It is not essential, nor is it feasible, that all the green material should be completely turned under when there has been a good high, cover crop standing in the orchard over the winter. The object of this annual ploughing is to aerate the soil thoroughly and, by turning under organic materials, to provide nourishment for the teeming soil life of the orchard.

With young trees, the suppression of citrus tree roots to a lower level can be done at this time of the year, but with older trees it is not wise to cut away too many of these roots. Too often, a grower applies the spring

manure and then so cultivates his grove that all the root hairs of the feeding roots are broken. The tree then suffers from lack of essential plant elements, although there has been an ample quantity supplied. By the time fresh rootlets have developed the more soluble manures have leached beyond the level of availability of the tree's roots.

Manure

The standard orchard manure 2:2:1—2 parts sulphate of ammonia, 2 parts super, and 1 part sulphate of potash—is a suitable spring dressing for most citrus trees. Most overseas experiments on the manuring of citrus trees appear to indicate that best results are obtained by the use of inorganic manures such as those mentioned, combined with organic manures, such as the autumn applications of fish manures and blood and bone plus green manuring crops. If stable manure can be obtained in quantity at a reasonable cost it can be used instead of blood and bone and fish manure, but for spring applications the quicker-acting inorganic manures are generally preferred.

—L. PAYNTER, District Supervisor, Auckland.

Cool Storage Notes

Limit of Cool Storage Life

THE MARKETING of the different varieties of apples and pears should take place within the limits of their cool storage life in order that the full flavour and qualities peculiar to each variety may not become impaired by too much cool storage. Pears and apples are often perfect in appearance on removal from cool storage, but they very soon deteriorate by becoming mealy, and develop core rot or external discolouration.

Once a buyer has had losses in purchasing this overlong cool-stored fruit he would probably avoid the variety in future. Fruit spot or discolouration is also a disorder found in overmatured fruit; it is due to late picking and over-long storage. The spots are subject to fungal rotting.

Beurre Bosc pears are seldom found to hold up satisfactorily in cool storage after July. Internal and external browning are often found to develop with this variety when held in cool storage after July or early August.

Winter Nelis pears should be kept under observation for speck rots, as this variety is subject to this form of rotting, even when it is still in a perfectly green and firm condition.

Winter Cole, if showing shrivel or wilt, should not be held too long.

Vicar of Winkfield pears should be kept under observation and tested for external discolouration by taking several pears out of the cool chamber and leaving them in ordinary atmospheric temperatures for several days. This should be done from time to time as the season progresses. This variety is by no means dependable for long storage.

Packham's Triumph pears, if held after September, are inclined to develop external discolouration.

Granny Smith apples which have been immediately placed in cool storage when picked and are in a perfectly green condition should be kept under observation and tested for immature discolouration by bringing several fruits out of the cool chamber. By repeating this test as the season progresses the detection of this tendency to discolour at an early stage will assist in avoiding losses. Bitter pit is showing up on some lines of Granny Smith in cool storage; therefore, a constant watch on lines of this variety held in cool storage is advisable as the season progresses.

—A. POWELL, Cool Storage Officer, Wellington.

New Life for Stunted Apple Trees

A SUCCESSFUL experiment on a stunted Sturmer apple tree in the orchard of Mr. A. McDonald, Outram, was carried out by him during the winter of 1937. The tree was one which had refused to grow for several years, was eighteen years old, and only about 5ft high. Although a constant cropper, the fruit was always small and russeted.

Last winter a trench was dug around the tree to expose all the main roots, and, in four or five different places, pieces of root taken from a vigorous growing tree were grafted on to the exposed roots, the grafts being about 1½in in thickness and 6in to 8in in length.

The result has been remarkable, and the average length of the new growth this season is in the vicinity of 30in. The crop also was of better quality, the fruit showing less russet and having a better texture.

—S. FREW, Orchard Instructor, Dunedin.

Vegetables, Small Fruits and Flowers

Contributed by the Horticulture Division

The Tomato Crop in the Unheated Glasshouse

IN PLANTING out the tomato crop in the unheated glasshouse, important points to observe include watering the plants well the day before removal, using tepid water at a temperature of about 60 degrees Fahrenheit. Experiments have demonstrated that the wider spacing of the plants when setting them out yields a crop at least equal to that which is planted closer. It is also safe to state that the plants are more easily managed, and there is less trouble and anxiety through the attacks of disease.

A distance of 12 inches between plants and 30 inches between rows admits more sunlight, permits better circulation of air, and gives more room for working than the closer spacing which is very commonly practised. The plants should be set rather deeper than they previously grew, but the extra filling should not be done until the plant is established and acclimatised.

Watering

Soil and subsoil should be thoroughly watered a few weeks before planting so that it can heat up again before that operation; the plants will then not require to be watered in, and watering will not be required until growth begins. Water only when necessary, using tepid water; little should be required before the fruit has set and warm weather can be relied on.

Planting should be done during a warm interval, keeping the doors shut as much as possible to avoid chilling the plants. The house should be kept rather close for a week after planting. Moderate ventilation should then be given at every opportunity, carefully avoiding cold draughts and maintaining a minimum of 55 degrees Fahrenheit at night.

Plant and Sow Now

During September important plantings are main-crop potatoes, seakale, cabbage and cauliflower, and also sowings of salad, spinach, parsley and peas, short carrots and globe beetroot. Towards the end of the month sowings may consist of celery, leeks, Brussels sprouts, and, in the warmer localities, dwarf beans.

Some of the important points to be observed are to plant only Government certified seed potatoes, more especially in the warmer districts; in such localities good crops are rarely obtained from any other stocks. Another point is to sow seeds thinly; it is with the finer seeds that mistakes are chiefly made.

Celery, lettuce, carrot and cabbage seeds are very commonly sown much too thick, which is a waste of seed, increases labour, and depreciates the crop. Therefore, sow thinly and avoid the labour of thinning out. If you are doubtful regarding the germination of the seeds, have them tested.

—*Wm. C. HYDE, Horticulturist.*

Seeds recently sown to raise plants for planting outside towards the end of October and beginning of November should, as soon as germination has taken place, be given air on all suitable occasions. Neglect in this respect is a common cause of trouble. Only after pricking out should they be kept rather close for a few days. At all other times admit air when temperatures permit, and thus produce sturdy plants which are well rooted. Give tepid water as required, but little will be necessary if the compost is right and the boxes are on a hot bed.

Manures for Asparagus and Rhubarb

ASPARAGUS and rhubarb are perennials which continue productive for a number of years before replanting is necessary. Asparagus is exceptional in that under good conditions it remains profitable for a period of 10 to 20 years. Rhubarb, on the other hand, requires replanting on fresh land at intervals of three or four years. To obtain the best results both demand generous manurial treatment, both in the preparation of the ground before planting and afterwards.

The manurial treatment of established crops of asparagus varies rather widely according to circumstances, but applications are chiefly made at the conclusion of the cutting season—that is, in December—and during the spring shortly before and after growth begins. The crop is partial to nitrogen, potash, and lime. It is also important, as with most herbaceous crops, to maintain an adequate supply of humus.

At this season a dressing per acre of 6 cwt. basic superphosphate and 2 cwt. muriate of potash, or 3 cwt. potash manure 30 per cent., will be a suitable dressing, followed up early in September with a dressing of 2 cwt. nitrate of

soda per acre, repeated as necessary at intervals of three or four weeks.

Rhubarb is given this attention at somewhat similar periods. A dressing of 5 cwt. superphosphate and 1½ cwt. sulphate of potash per acre may be worked in now, and 2 cwt. sulphate of ammonia when pulling begins, followed by a rather larger dressing of the same fertilisers as soon as pulling is completed for the season. After the first dressing mentioned some growers find it advantageous to spread a dressing of long, strawy, stable manure when available, as it has a tendency to encourage early growth.

Small-Fruit Crops

WORK to be done to small-fruit crops during September consists of completing the planting of new areas and the cultivation and spraying of established crops. It is of importance here that the cultivation should be shallow so that roots are not disturbed. Shallow ploughing is sometimes done in late autumn and during the winter, and it is satisfactory where it has been the regular practice, but any disturbance of the roots now will seriously injure the crop.

Planting Shelter

TO ENSURE that full advantage of the coming growing season is secured, the planting of hard-wood plants should be completed during September, which, under most conditions, terminates the period of the present planting season.

A recent exchange from South Africa, in an article dealing with shelter belts in country subject to frosts sufficiently hard to make the establishment of Eucalyptus somewhat difficult and subject to periods of severe drought, recommended planting the margins with *Pinus halpensis, Cupressus arizonica, Cupressus torulosa, Cedrus deodara, or Juniperus virginiana,* especially for affording a substantial measure of protection from frost. It is recommended they be planted 12 to 20 feet from the gums and 12 to 18 feet apart to retain the basal foliage, and if two rows of conifers are planted they should be alternate and 15 feet between the rows.

While such a recommendation can be accepted here only with caution, it is of interest to those who frequently have conditions of frost and drought to contend with. A recent article in this journal gave strong support to the planting of *Cupressus arizonica* for shelter in dry areas here, and the other trees mentioned (with the exception, perhaps, of *Pinus halpensis*) may be readily obtained for trial purposes in positions where they are not already established, which would afford opportunities for studying their behaviour under extreme conditions.

Control of White Butterfly

The white butterfly emerges first during August, and by the middle of September it is usually fairly numerous.

While a solution of arsenate of lead will protect crops from the attack of this and most other caterpillar larvae, such a spray is unsuitable for application to cabbages and salad crops. For these crops a good brand of derris powder should be used. It is quite as effective, and is non-poisonous. If the powder is stored in a dry place and kept tightly covered it will retain its essential qualities, and better and more economical distribution will be obtained.

The dust should be applied during windless periods in the early morning or late afternoon. A thin, even application is what is required. It is a considerable deterrent for aphis and other sucking insects, and experience indicates that good control of slugs may be expected from its use.

—Wm. C. HYDE, Horticulturist.

The Home Garden

SEASONABLE work in the home garden includes sowing hardy annuals. Sweet peas, mignonette, nasturtiums, etc., have an ornamental value comparable with anything which may be planted if a suitable situation is chosen. Half-hardy annuals may be sown in boxes under glass and pricked out later for planting out when comparatively frost-free weather can be relied on.

In beds reasonably enriched with decayed farm manure and bone-dust a bright display can be obtained with comparatively little labour if the arrangement is a simple one.

House plants in pots and hanging baskets may be re-potted as required. They should be thoroughly watered a few days before the operation, and afterwards very sparingly until a new growth has begun.

New lawns may be laid with excellent prospects in the more humid districts, but in the drier areas the work should be expedited. Established lawns may usually be given at this season with advantage a dressing of a mixture of superphosphate 3 parts, sulphate of ammonia 4 parts, and finely-ground sulphate of iron 1 part, applying it evenly at the rate of 1½ oz. per square yard. It should be thoroughly mixed with a little fine soil or sand to facilitate even distribution.

—Wm. C. HYDE, Horticulturist, Wellington.

Book Review

We have received a copy of the fifth edition of "Pasture Plants and Pastures of New Zealand," by Dr. F. W. Hilgendorf, sometime Professor of Agricultural Botany at Canterbury Agricultural College.

As stated in the preface, the arrangement of the book has been little altered. The recent work done at Lincoln and Palmerston North on the influence of strain on the growth of ryegrass, cocksfoot, and white clover has been incorporated, and many opinions have been altered as the result of new observations both in experimental plots and in the field.

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APIARY NOTES

Contributed by Officers of the Horticulture Division

Examination of Stores and Brood

GENERALLY speaking, the temperature during August is too low to allow of any prolonged inspection of the bees. There are, however, certain localities, more especially in the North Island, where it is sometimes possible to take advantage of warm, sunny days to open up the hives for a brief examination of the stores and brood. At this time of the year hives containing a young queen and a fair number of bees should have one or two frames containing brood in all stages in the centre of the brood chamber.

When this first examination takes place the bee-keeper should take notice of the condition of each colony; this applies more particularly in regard to stores. A quick glance will enable the examiner to tell whether they are safe in this respect, but to beginners a note of warning should be given to avoid underestimating the quantity required to see the colony over the spring months.

Consumption of Stores

The consumption of stores is not so heavy in the colder months as it is in the spring. It is when the queen bee is laying in four or five frames and increasing her brood-rearing that they consume the greatest amount of stores. Probably more colonies are lost from starvation in October and November than in any other months of the year. It is only in a few favoured localities that the bees are able to gather sufficient honey in the spring months to keep the brood-rearing at the fullest capacity.

If, on examining the hives at this time of the year, there is found to be less than two or three frames of honey a note should be made to give it further stores or to examine again a month later. If the weather permits, a brief examination may also be given to the brood chamber. Should brood or eggs be noticed, you will then know that the hive is "queen-right," but if neither brood nor eggs are in evidence the hive should be marked for a further examination a week or two later. If there is no improvement at this second examination and no queen can be found it should be marked as "queenless" and united as soon as possible to a hive known to have a queen.

Uniting Colonies

The method of uniting two colonies of bees is quite simple.

First remove the lid and mat of a hive having a queen, then place over the frames two sheets of newspaper, put back the lid for the time being, and, at night, when all the bees have quietened down, remove the lid and gently lift the queenless hive off its stand, placing it over the paper-covered hive. The position now will be that the bees in the top hive are unable to get out until they have eaten a way through the paper. This will probably take a day or two. During this time, while making a way through, the bees become friendly, and unite without fighting. A week later the remains of the paper can be removed.

It will be found that the uniting of two weak colonies at this time of the year, even if both have a queen, is a sound proposition, for a medium-sized colony will build up so much quicker in the spring and be much stronger than would be the case if two weak units are allowed to build up separately. In uniting in such cases the poorer queen may be killed, but if they are of equal value they may be left to fight it out.

Preparing Wax

If the rending and purifying of wax has not yet been done the bee-keeper would be wise to attend to this matter before the busy period arrives.

In most commercial apiaries the melting of the wax cappings is done at the time of extracting by the use of melters or electric ovens made for the purpose. Those who are bee-keeping in a comparatively small way will find a solar wax extractor very useful where there is a good deal of sunshine. It is very handy for collecting odd scraps of broken comb, and will be found very effective for melting up the cappings after extracting.

Cappings should first be well drained, otherwise a quantity of honey may be spoilt after going through the solar melter because of its great heat. Any person handy with tools would find no difficulty in making one. The reader desiring to do so will find full particulars in the Bulletin No. 128 on bee-keeping, which may be obtained for 1/- from any office of the Department of Agriculture. In fact, no beginner should be without this book, which contains a great deal of useful matter for the bee-keeper.

Preparing for the Coming Season

As the busy period is rapidly approaching, the bee-keeper should first of all make his plans. Should an increase be desired, he will need to estimate the number of new hives and frames that will be necessary, and also the quantity of foundation wax he

will require for the proposed increase. He will then be wise to place his order as early as possible, and to put together the hives and frames. The placing of the foundation wax in the frames can now be done.

All these matters take up a good deal of time, which cannot well be spared in the spring months, when the bee-keeper is fully occupied in the apiary itself.

In regard to the use of foundation wax in the frames, beginners should be warned not to attempt to economise by putting only part sheets into the frames. To do so is most uneconomical, for the bees will build a large proportion of drone-comb, thereby producing many useless drones at the expense of the more profitable worker bee.

In addition to this loss, there is a great loss of time in the bees having to devote their time to building the extra comb necessary to fill the frame, so that by putting in full sheets both time and honey is saved and may mean the difference between success and failure.

—G. V. WESTBROOKE, Apiary Instructor, Hastings.

Fruit in Cool Stores and Ordinary Storage

The following is the estimated quantity of apples and pears in cool stores and in ordinary storage at May 31, 1939:—

	Apples. (Cases.)	Pears. (Cases.)
Kerikeri—		
In cool storage ..	—	—
In ordinary storage	200	—
Henderson—		
In cool storage ..	—	—
In ordinary storage	450	—
Auckland—		
In cool storage ..	116,772	27,634
In ordinary storage	1,100	—
Hamilton—		
In cool storage ..	2,700	330
In ordinary storage	3,844	15
Tauranga—		
In cool storage ..	—	—
In ordinary storage	230	200
Gisborne—		
In cool storage ..	11,197	1,941
In ordinary storage	6,400	32
Hastings—		
In cool storage ..	98,596	32,259
In ordinary storage	5,000	—
Palmerston North—		
In cool storage ..	1,266	—
In ordinary storage	2,000	—
Wanganui—		
In cool storage ..	—	—
In ordinary storage	3,000	30
Masterton—		
In cool storage ..	8,600	650
In ordinary storage	2,000	—
Wellington—		
In cool storage ..	51,507	12,377
In ordinary storage	—	—
Nelson—		
In cool storage ..	32,957	7,428
In ordinary storage	8,500	50
Mapua—		
In cool storage ..	—	—
In ordinary storage	8,750	250
Motueka—		
In cool storage ..	31,950	8,000
In ordinary storage	9,000	—
Blenheim—		
In cool storage ..	—	—
In ordinary storage	2,900	150
Christchurch—		
In cool storage ..	44,326	8,382
In ordinary storage	24,000	600
Timaru—		
In cool storage ..	—	—
In ordinary storage	12,000	500
Dunedin—		
In cool storage ..	1,592	1,116
In ordinary storage	4,000	50
Roxburgh—		
In cool storage ..	250	—
In ordinary storage	42,000	—
Alexandra—		
In cool storage ..	50	280
In ordinary storage	28,500	2,250
	565,637	104,524
Total in cool stores ..	401,763	100,397
Total in ordinary storage	163,874	4,127
Grand total	565,637	104,524

Tribute to N.Z. Cocksfoot

A STRIKING tribute to New Zealand cocksfoot is to be seen in the 1938 annual report of the seed testing station of the Scottish Department of Agriculture.

"Eight samples described as Danish-grown Akaroa cocksfoot and two samples described as English-grown Akaroa cocksfoot were sown out to ascertain if they were genuine late-flowering cocksfoot. None of the trial rows gave plants equal to New Zealand Akaroa," states the report.

"Forty-one samples submitted as New Zealand Akaroa cocksfoot were sown out. Observations on the trial rows proved that they were geninue."

Purchasers are reminded that the only certain way of knowing that they are obtaining genuine New Zealand (Akaroa) cocksfoot is to purchase the seed in sealed and tagged sacks which has been certified by the New Zealand Department of Agriculture.

A farmer in the Bay of Plenty district sowed down a paddock of lucerne last November. He had ordered sufficient culture and seed to provide for the whole field, but owing to faulty setting of the broadcaster, he ran out of seed, leaving one-eighth of the field still to be done. He bought some seed sufficient to finish the paddock and sowed it the same day, without culture. When seen recently the difference between culture and no-culture areas was most marked. The portion of the field receiving culture is green and thriving, while the no-culture portion is yellow, stunted, and showing little or no vigour.

Notes for the Poultry Farmer

Contributed by Officers of the Livestock Division

Correct Artificial Brooding

MOST poultry-keepers now realise that unless a sufficient number of good pullets can be reared each year to replace from one-third to one-half of their flocks the venture is not likely to prove the greatest success. The question is often asked: "What is the average or normal loss that may be expected during the rearing stage?"

The following remarks concerning this matter are taken from W. A. Lippinott's "Poultry Production":—

"Losses by death are commonly accepted as a necessary part of the cost of raising chickens, but there has been no agreement as to what might be looked upon as standard or normal mortality. Indeed, there has been little available evidence on which to base such calculations until very recently. The mounting death losses in many sections of the country led eventually to the outlining and carrying out of rather rigid sanitation programmes, and the results of their adoption have shown clearly that death losses can be greatly reduced from what they would be without the application of such practices.

"In a technical sense, it is important to distinguish between the normal or expected mortality, such as might properly be used for the construction of a life table, and the specific death loss resulting from infectious diseases, parasitic infestation, and the like, though the practical poultryman is chiefly concerned with the total death loss and its monetary significance.

Daily Mortality

"Voorhies and Read (1931) have made the only extensive study of daily mortality in young chicks and their data over the first 14 days of the brooding period, and which included 6,000,000 chicks in 6343 broods in the years 1927, 1928, and 1929. The total loss, or crude death rate, in each of the three years was 685, 739, and 843 respectively per 10,000 chicks. On the basis of daily mortality their data shows a rapid rise to a sharply-defined peak on the fifth day, with a rapid falling off after the fifth day until the 14th, when the rate is slightly below that of the first day. They concluded that there are indications of a typical curve depicting the chances of life for a baby chick during the first 14 days of the brooding period, and that baby chicks have approximately 920 chances out of 1000 of reaching the 15th day of the brooding period.

"Landauer and Landauer (1931) made a study of mortality in relation to the sex ratio. They found that the combined figures for all observations of various workers, of the sex of chicks at hatching, amount to a total of 67,993 chicks, with 33,162 or 48.77 per cent., males. It cannot be doubted, therefore, that in general there is a deficiency of male chicks at hatching time. They found that the mortality during the first two months after hatching was greater among males than among females.

First Eight Weeks

"Barrett (1929) studied the causes and distribution of mortality among 4806 chicks in seven different hatches during the first eight weeks. The total loss amounted to slightly more than 11 per cent. He concluded that the crude mortality curve, plotted on a time basis, is characteristically bimodal when both pullorum disease and coccidiosis are factors in the death

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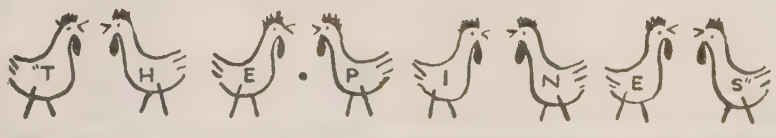


loss, and mono-modal in the absence of coccidiosis. He found a relatively high initial mortality, unassociated with disease, that was greatest during the first week and much reduced during the second and third weeks. This is in accord with the findings of Voorhies and Read.

"Judging from the results of sanitation plans that have been carried out in a number of States during the past few years it is entirely possible to reduce the total mortality, from hatching time to maturity, to something less than 10 per cent. It is probable that it will become increasingly necessary for a commercial poultryman who expects to remain in business to adopt a management plan that will keep his gross rearing mortality at or below this figure."

Local Experience

The writer's experience indicates that many chicken losses might have been avoided if the brooder attendants had had more practical experience, enabling them to adopt a better method of management and a stricter sanitation programme. There is little doubt that many losses occur not as a result of diseases, but due to unsuitable environment, causing ailments which could have been checked had the first unfavourable symptoms been detected and the conditions corrected at once.

The great art or secret of the artificial brooding of chickens is the ability to notice any unfavourable symptoms and to remedy conditions before serious trouble has time to develop. This knowledge is gained only by practical experience.

Practical experience trains the eye so that it can be seen at a glance whether the chickens are developing or whether they are a little "off colour." The ears become trained to distinguish the different chirps of chickens, and to note when the brooder house is entered whether the chickens are comfortable or not. The nose becomes trained to detect at once any dampness, mustiness, or staleness under the hover, or whether the chickens have had a chill and are suffering from a slight digestive disorder.

The person who has had the necessary training to realise fully the great importance of attention to little details and to correct any unsuitable night condition immediately it is noticed is the most likely to make a real success of artificial brooding of chickens.

EGG YIELD DOUBLED!

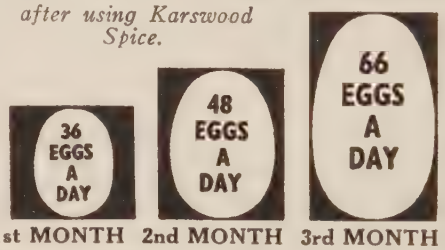
—Since poultry-keeper's 100 birds were given daily dash of Karswood Spice (containing their **natural stimulant** *—ground insects).*

To many poultry-keepers, the last month or so of Winter is a period when eggs are scarce and hens (after a long spell of rigorous weather) in a poor and run-down condition. Here, then, is a letter of good cheer which shows how birds CAN be kept in tip-top health and laying eggs galore. All it is necessary to do is to start adding Karswood Poultry Spice to the mash right away.

It is thanks solely to Karswood that this gratified user's egg supply from 100 birds rose from under 36 eggs a day to 66 eggs a day—with the birds healthier than ever. To quote his own words, *"I have never had as many eggs in the winter months before, and I have kept hens over 40 years."*

SHOWING IN EXACT PROPORTION HOW THE EGG YIELD INCREASED

after using Karswood Spice.

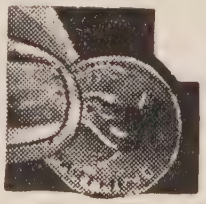


Test out this wonder egg-producer to YOUR profit! You'll find it will repay its very low cost many times over in the EXTRA eggs it produces. Read the letter:—

BEST WINTER RESULTS FOR 40 YEARS

"I am a smallholder and at the beginning of April my 100 hens and pullets were not laying as well as they should, so I made up my mind to give your Karswood Poultry Spice a fair trial. By the end of April the birds were averaging 36 eggs a day, and a month later 48 eggs a day. By the end of June the average had risen to 66 a day, or double the quantity inside three months, and up to date, they are still laying the same number of eggs as June. I have never had as many eggs in the winter months before and I have kept hens over 40 years. The birds get a hot mash in the morning, not forgetting the full quantity of Karswood, as directed on the packet, and they have never looked better or healthier. The profits I now get from my poultry are a very handy additional source of income, and I intend giving Karswood the full year's trial it certainly deserves." —E.I.

(Original letter on file for inspection.)



¼D. A DAY FOR EVERY FIVE HENS IS ALL IT COSTS YOU

1/- packet of Karswood supplies 20 hens for 16 days; 2/- packet supplies 40 hens for 16 days; 7 lb. tin (12/6) supplies 280 hens for 16 days. Try a shilling packet.

KARSWOOD POULTRY SPICE

Increases egg-production without forcing, because it contains ground insects, but no cayenne pepper, &c.

Brooder Equipment

The requirements of successful brooding are good brooders and a suitable brooder house, rooms, or shed. Chickens can be successfully raised by means of either a fireless or heated brooder. A good fireless brooder will raise good birds if well handled, but to be successful with a fireless brooder the chickens need much more attention, especially during the first week or two. The most popular heated brooder in this country is that known as the canopy, or umbrella-shaped brooder. These are heated by means of electricity or oil lamps, and are made in different sizes.

A brood room or shed about 12ft. x 12ft. is considered suitable for working a canopy brooder to brood 300 chickens, but such a room or shed should be dry and free from draughts, yet properly ventilated.

Temperature Under Hover

The beginner is advised to use a thermometer, so that he may know at what temperature the brooder is being kept. A temperature of about 90 degrees F. before the chickens are placed under the hover should give good results. However, it is also advisable to keep a close watch on the chicks and to note how they are acting under the hover.

If they crowd, more heat is required. If they stand up with their mouths open and are panting, it is a sign of too much heat or insufficient ventilation, but if they settle down scattered about the hover it may be assumed that the temperature is correct. The heat should be reduced gradually as the chickens grow. It is a good practice to raise the hover about one inch each week, as this will give extra fresh air at night and gradually reduce the heat.

Training Chicks

Whatever class of brooder is used, the chickens must be more or less confined during the first few days, or at least until they know what to do and where to go when they require heat. Chickens often need a warm up, especially during the first week or so. It may be for only a few minutes, but those few minutes mean a great deal to the welfare of the chicks. The brooder attendant must see to this training if the best results are to be attained.

Guard Against Dampness

Dampness must be guarded against at all costs. A good bedding of straw chaff 2in. deep should be used under the hover and in the brooder room, as this will ensure comfort for the chickens and be a guard against dempness. It is also advisable to place the hover on a wire netting frame, such as recommended in this Department's bulletin "Utility Poultry Keeping."

The great majority of losses among brooder chicks may be attributed to either chill, overcrowding, dampness, or unclean bedding material, and, as these are matters of management, everything should be done to avoid such conditions and so reduce the cost of production. Leaflets containing full particulars regarding a method of feeding brooder chickens may be obtained by application to this Department.

—C. J. C. CUSSEN, Chief Poultry Instructor, Wellington.

Value of Paspalum.

The value of paspalum as a feed producer par excellence even in times of prolonged drought has been amply demonstrated during the past season, and farmers throughout North Auckland have been unanimous in paying tribute to this wonderful grass. It has been particularly noticeable that though all farms have suffered to some extent from lack of rain, the older pastures in which paspalum has become well established have continued to produce an astonishing quantity of palatable green feed, while the younger pastures in which ryegrass and clover predominate have long been parched and bare. For this reason those farmers who are mainly dependent on comparatively young pastures have been very hard hit, and it is almost possible to judge the age of a farm by the condition of the cows.

Slaughterings of Stock

THE following return of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months of May and June, 1939, has been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Swine
North Island						
Meat-export Slaughterhouses—						
Auckland	55,650	19,188	18,617	11,257	48,279	36,635
Poverty Bay-Hawkes Bay	16,711	6,688	82,683	20,627	110,656	5,303
Taranaki-Manawatu ..	33,019	2,504	48,423	22,958	142,918	26,491
Wairarapa-Wellington ..	13,986	2,167	27,656	11,923	68,816	4,553
Totals	119,366	30,547	177,379	66,765	370,669	72,982
Abattoirs	21,660	6,927	78,485	40,420	8,765	17,755
North Island Totals ..	141,026	37,474	255,864	107,185	379,434	90,737
South Island						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	583	9	5,433	2,114	23,420	1,681
Canterbury	2,869	2,646	135,418	98,045	434,443	8,418
Otago-Southland	2,510	94	60,247	38,440	572,131	1,241
Totals	5,962	2,749	201,098	138,599	1,029,994	11,340
Abattoirs	10,321	2,569	50,813	26,746	5,739	6.029
South Island Totals ..	16,283	5,318	251,911	165,345	1,035,733	17,369
Dominion						
Meat-expt. Slaughterhouses	125,328	33,296	378,477	205,364	1,400,663	84,322
Abattoirs	31,981	9,496	129,298	67,166	14,504	23,784
Grand Totals .. .	157,309	42,792	507,775	272,530	1,415,167	108,106
May and June, 1938: Meat-export Slaughterhouses and Abattoirs .	124,202	30,660	572,299	350,107	1,245,660	157,207
May and June, 1937: Meat-export Slaughterhouses and Abattoirs ..	132,663	32,969	487,619	270,222	1,385,107	172,422

N.Z. Federation of Young Farmers' Clubs

Edited by S. Freeman, Dominion Organizing Secretary

Tree Planting In North Otago

A. HELLIWELL, Enfield Club.

THIS article is intended to deal particularly with the problems which confront the average farmer. Before tree planting operations can be started due consideration must be given to the circumstances in which the plantation is to be established.

It is necessary to plan ahead before any steps are taken to select a site so that the maximum amount of benefit can be obtained from the area which is used. On flat farms, in many cases, trees can be planted on existing fence lines to suit the particular farm situation. On the other hand, with hill country one has often to plant to suit the conformation of the ground.

Having selected a suitable piece of ground, the area should be protected by a good stock-proof fence, and if the locality is infested with rabbits it is essential to complete the fence with rabbit-proof netting. The cost of fencing is admittedly high, but fencng is absolutely necessary to establish a prosperous plantation.

Method of Planting

The method of planting most commonly adopted in North Otago is called pit planting, which consists of digging holes some time before planting out the young trees. One disadvantage of pit planting is that until the trees become rooted into the solid surrounding ground they are liable to be blown out of position in a strong wind during or after heavy rain. Should this occur, it is necessary to ram back into place any trees which have been disturbed.

As regards the best time to transplant young trees, no hard and fast rules can be laid down, but May and June are the most suitable months because the young trees have had sufficient time to develop a good rooting system before the strong equinoctial gales in spring. In districts which suffer from hard frosts in the winter months, spring planting is to be recommended.

There are many people who have neither the time nor the inclination to grow their own seedlings, but those who can find that to have a nursery of their own is more interesting and convenient. Seedlings can be grown in the garden in a light, loamy soil, deeply cultivated and allowed to become firm before the seeds are sown. Care must be taken to distribute the seeds evenly and at a uniform depth to secure a good strike. The seed bed must be watched and weed growth kept down to allow healthy and vigorous growth of the young trees.

Forestry experts advise that trees should be "wrenched" to encourage the growth of fibrous roots, which enable the tree to establish itself more easily after being transplanted. Wrenching is usually done one month before the trees are shifted. I have seen a plantation of *pinus insignis* trees which were not wrenched but were transplanted direct from the garden to a plantation in a very exposed position. Every effort was made to establish tap-root growth. Practically no replacements were required. The trees are now 15 years old and have withstood all winds. On the other hand, trees which were "wrenched" have developed a surface rooting system and are more easily blown over.

Most Common Trees

The most common forest trees used on the farm, are the *pinus insignus, macrocarpa,* and members of the *eucalyptus* family. The *pinus insignis* undoubtedly is the most popular. It is easily grown, and provides good shelter and useful timber. *Pinus insignis* trees planted as a shelter belt are definitely improved if a row of *Cupressus Lawsoniana* is planted on the windward side of the belt, the *Cupressus* effectively filling the space left by the growth of the *pinus insignis.* Both the *macrocarpa* and *eucalyptusu* are harder to grow than *pinus insignis,* but as a compensation provide better timber for farm use.

During the first year one should go round the plantation and trim away the grass from the young trees so that they are not smothered. Failures should be replaced by healthy trees, if possible of the same age as the original ones. During the first few years one should watch for trees with two leading stems. If any are found one should be cut out, leaving the other to develop as the leading shoot.

I would suggest that those who are interested in establishing the less known varieties of forest trees should ask farmers who have had experience with them. All farmers should consider the growing of more trees on their properties, but unless fencing and care can be arranged for they would be better to let the question lapse until such time as the necessary care and attention can be provided.

Y.F.C. Courts at Waikato Winter Show

W. T. BROWN, Assistant District Secretary, Waikato.

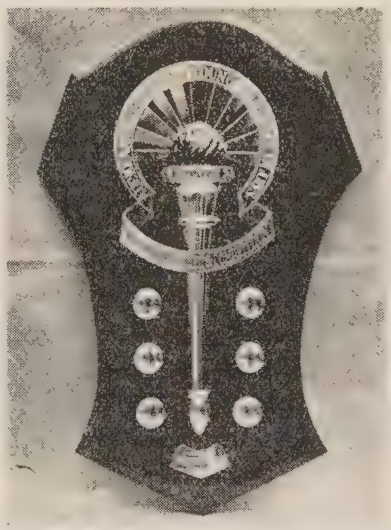
The Rotorua Court.

The King Country Court.

AT THE suggestion of the Auckland Provincial Council of Young Farmers' Clubs it was arranged that each district within the Council's area should endeavour to stage a display at the Waikato Winter Show.

The displays took the form of courts on the balcony of the Bledisloe Hall, and, although the clubs were given very short notice, four districts competed and the displays were very good.

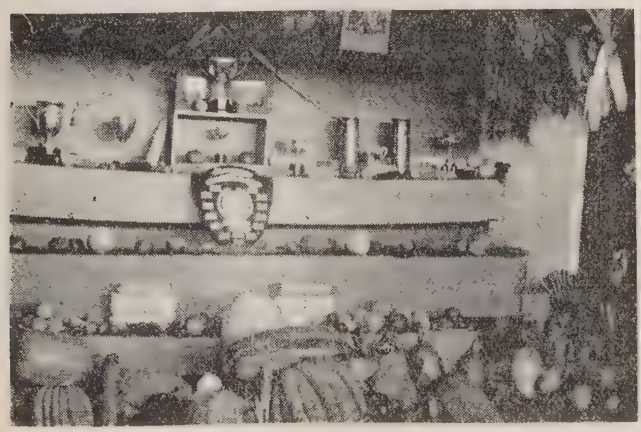
Rotorua Clubs, with 90 points, secured first prize, and will therefore hold the shield presented by Messrs. Kempthorne, Prosser, and Co., Auckland, for 12 months. The court displayed all types of farm produce grown in the district, and was interspaced with various sporting trophies, which showed off the various fruits and farm produce to advantage.



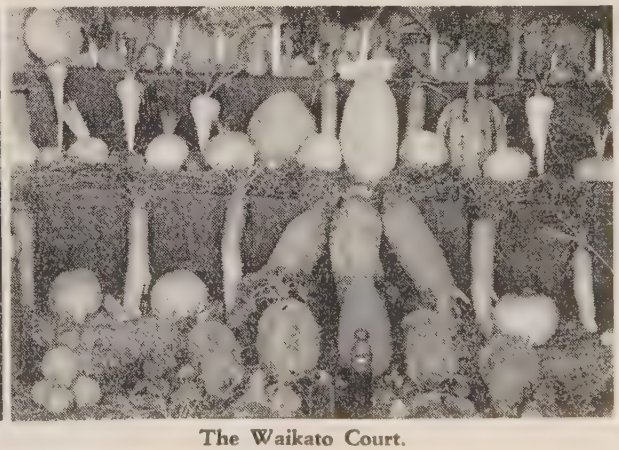
The K. P. Shield.

The King Country Clubs were second with 75 points, the Bay of Plenty Clubs third with 70 points, and the Waikato Clubs, with 60 points, were highly commended.

All clubs and club members who assisted to make the courts a success are to be congratulated, and the experience gained will be of considerable value as a guide to securing the premier position in years to come.



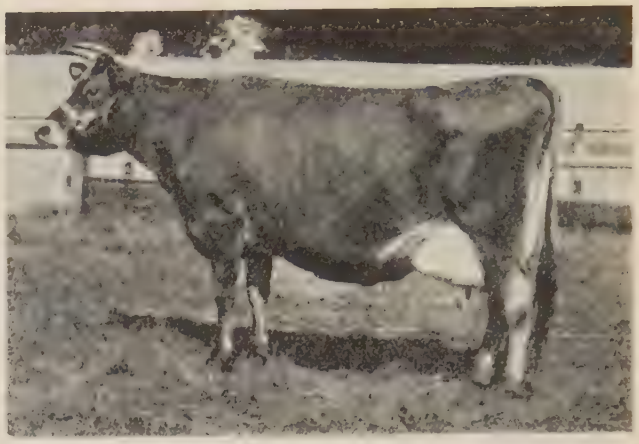
The Bay of Plenty Court.



The Waikato Court.

Which Is The Best Cow?

1.



2.

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4.

5.

6.

[Photographs by courtesy of Wright, Stephenson and Co., Ltd.]

Y.F.C. Dairy Cow Judging Competition

THIS competition, which closes on 23rd September, presents an opportunity to Young Farmers of testing their knowledge of dairy cows.

Competitors are required to place the six cows—the photographs of which appear on the opposite page—in order of merit, giving briefly their reasons. A fee of 1s per entry will be charged, and the whole of the money will be divided in prizes.

The judges will be accredited breeders with show-ring experience.

The competition is sponsored by the committee of the Levin Young Farmers' Club, which is guaranteeing £7 10s in prize-money to ensure its success.

Conditions

The conditions are as follows:—

(1) The competition is open to all Young Farmers (whether club members or not) between the ages of 14 and 30 years.

(2) The cows are to be judged from the photographs, and should be placed in order of merit, giving reasons for the placing.

(3) Competitors must fill in their placings on the special form, which will be supplied on application.

(4) Applications must be made to the Organising Secretary, Y.F.C., Department of Agriculture, Private Bag, Wellington, on the application form below, and should be accompanied by 1s entry fee. Judging forms will be posted to competitors on receipt of the application.

(5) The closing date for judging will be September 23, 1939, and judging forms should be posted not later than that date. Any forms bearing a later post-mark will not be accepted.

(6) All money received in entry fees is divided as prizes.

(7) The judges' decision will be final.

APPLICATION FORM

TO : The Organising Secretary,
N.Z. Federation of Young Farmers' Clubs (Inc.)
c/o. Department of Agriculture,
Private Bag, Wellington.

I wish to compete in the Y.F.C. Dairy Cow Judging Competition. Please send me the requisite judging form. I enclose 1s (postal note) as entry fee. I agree to the conditions laid down for the competition.

Name (block letters) .....

Full Postal Address .....

.....

I am a member of the ..... **Young Farmers' Club.**
I am not a Club member.

(Strike out which does not apply).

Final Debate for Bay of Plenty Shield

A. V. ALLO, District Secretary, Western Bay of Plenty.

MORE than 300 Young Farmers and their friends attended the final debate for the Bay of Plenty Shield, which was held at the Paengaroa Hall on May 25.

Mr. E. Blackmore (Paengaroa Y.F.C.) presided, and welcomed the visitors.

The subject for debate was: "That Democracy is a Failure," and the competing teams were Waimana, representing the Eastern Bay of Plenty, and Paengaroa, representing the Western Bay of Plenty. Waimana took the affirmative side of the debate and Paengaroa the negative.

Debating was very keen, and a distinct improvement in the standard was evident. The judge, Mr. Gifford, Tauranga, commented particularly on the amount of preparation that had been done, and expressed his pleasure at the very high standard of the contest.

After a hard fight the Waimana Club was given the verdict by the close margin of three points, and thus won the shield for the second year in succession.

The teams were as follows:—

Waimana.—B. Woolfield (leader), R. White, L. McDonald, H. White.

Paengaroa.—P. Hickson (leader), E. Pinker, V. Benner, A. Walter.

After the contest the shield was presented to the winning team by Mr. D. S. Ross, District Chairman, who made an appeal for the support of all farmers present. He also stressed the value of club and inter-club debates, and outlined the proposed series of debates to be held at the Y.F.C. Rally at Ruakura in July.

Mr. Woolfield, in accepting the shield, also stated how valuable the debating contests were and how much pleasure could be derived from such pursuits.

The evening closed with a dance, after supper had been served by members of the Paengaroa Club.

First Field Day of Dargaville Y.F.C.

E. H. ARNOLD, District Secretary, Dargaville.

THE FIRST field day arranged by the recently formed district committee was held at the Paparoa Showgrounds, the function taking the form of stock judging demonstrations, followed by Young Farmers' judging competitions.

Opening the proceedings in the presence of some 37 members of the Arapohue, Marohemo, and Ruawai Clubs and interested farmers, Mr. P. W. Hill, district vice-chairman, welcomed those present, and stated that he firmly believed that this function would be the forerunner of many other valuable and instructive field days.

Mr. F. Cullen, well-known breeder of Jerseys at Maungaturoto, said he welcomed the opportunity of assisting such a valuable movement among the young farmers of the district. It was necessary, he said, that all farmers, including the future farmers, should take advantage of all the knowledge now available to the farming community, and that new ideas should be tried out where practicable.

Following his demonstration on the points of a dairy cow, members of the Young Farmers' Clubs took part in a judging competition, using three pedigree Jersey cows made available by Mr. H. Marras, Marohemo, a keen and successful Jersey breeder.

Members watching a demonstration on a dairy cow.

After an enjoyable lunch arranged by Mr. J. Sutherland, Mr. J. Whyte, Parahi, Matakohe, demonstrated on the Clydesdale horse. Numerous questions of horse breeding were asked the demonstrator. This was then followed by a judging competition, using three horses made available by Mr. J. Sutherland, Paparoa.

The winners of the judging competitions were:—

Dairy Cow.—E. Barnes-Walker, Ruawai Club, 1; C. Fergus, Marohemo Club, 2; J. Whyte, Ruawai Club, 3.

Clydesdale Horse.—T. Montgomery, Arapohue Club, 1; A. Aiken, Arapohue Club, 2; J. Whyte, Ruawai Club, 3.

The special prize donated by Mr. L. E. Ambury, Ruawai, for the Young Farmer gaining most points in both classes was awarded to E. Barnes-Walker, Ruawai Club, who was first in the dairy cow and fourth in the Clydesdale horse classes.

At the conclusion of the day when the prize-winners were announced and the prizes presented votes of thanks were passed to Messrs. Cullen and Whyte for their demonstrations, and to Messrs. Marras and Sutherland who provided the stock.

Empire Y.F.C. Visitors

INVITATIONS have been extended to Y.F.C. and kindred organisations in Great Britain, Canada, South Africa, New South Wales, Victoria, Western Australia and South Australia to send representatives to visit New Zealand as the guests of the N.Z. Federation for approximately six weeks during the Centennial celebrations.

The visitors will be conducted through the principal farming districts of the Dominion, and opportunity will be afforded for contact with New Zealand clubs and club members.

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From Otakiri, Auckland.
Thank you very much for the Diploma which I received. The Course just completed will be of great value to me. Signed (———).

From Tatuanui, Thames, Auckland.
I feel confident that the Course I took will prove to be very useful to me, and am very grateful for the help and assistance given to me during my studies.—Signed (———).

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P.O. Box 693, Dunedin. (Correspondence, Department J.A.2).
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ADDRESS .....
.....

Amuri Club's Field Day

T. H. BELTON, Hon. Secretary, Amuri Club.

UNDER the auspices of the Amuri Young Farmers' Club, a most successful field day was held recently on Mr. M. Bethell's property, "Pahau Pastures," Culverden, on Saturday, 22nd April. There was a large attendance of farmers and members.

The party assembled at the homestead at 1.30 p.m., where Mr. R. Bethell welcomed the guests. An inspection was made of the calf feeding pens and a manure distributor. Mr. Bethell then conducted the party over the property by car. Numerous stops were made at points of interest, and Mr. Bethell gave a full and interesting account of his management.

At the slaughter-house Dr. W. G. Todd, Rotherham, gave an address on "Hydatids," and Mr. Bethell demonstrated the precautions that should be taken in the disposal of offal. While the party was inspecting a paddock of certified Italian ryegrass and Montgomery red clover Mr. A. S. Nash, Instructor in Agriculture, Rangiora, gave an address on the certification of seeds.

Dr. W. G. Todd lecturing on hydatids.

Afternoon tea was served at the homestead, bringing a very interesting and instructive field day to a close.

On behalf of those present Mr. K. Dunbar (club chairman) thanked Mr. M. Bethell for his hospitality, Mr. R. Bethell for arranging and carrying out the programme, and Dr. Todd and Mr. Nash for their addresses.

Dannevirke Club Holds Combined Field Day

K. BATEMAN, Hon. Secretary, Dannevirke Club.

A VERY successful combined field day was held on the Dannevirke Showgrounds on Tuesday, May 30.

There was an attendance of more than 300, and the weather was ideal. During the day the following demonstrations were carried out:—

Setting of the plough: Thos. Yardley, Palmerston North; points of a dairy cow, T. Ranford, Ashhurst; points of a draught horse, V. Bird, Foxton; Romney and Southdown sheep, W. R. R. Hewitt, Massey College, Palmerston North.

Sheep judging competitions and dog trials were also held for members of the Young Farmers' Club. Mr. J. S.

Mr. J. S. Tait, Dannevirke, in an exhibition dog trial using four dogs.

Tait, Dannevirke, acted as judge in the dog trials, and the results were:—

D. Simmons' Lad, 35 points 1
W. Toogood's Nell, 33½ points ... 2
T. Morrison's Lad, 33 points 3

The sheep judging results were:—

Romney Hoggets.—G. N. Buchanan, 1; E. H. Hooper-Smith, 2; W. Simmons, 3.

Southdown Hoggets.—W. Simmons, 1; W. Robinson, 2; E. H. Hooper-Smith, 3.

One of the main attractions of the day was an exhibition dog trial run by J. S. Tait, who used four dogs. This event was considered by experts as an outstanding exhibition of control.

During the day firms dealing in farm machinery staged an exhibition of modern equipment for farm use.

Mr. W. McLaren, of Masterton, past president of the N.Z. Federation of Young Farmers' Clubs, was present and officially opened the field day.

The combined committee is more than satisfied with their first effort, and it is intended to make this an annual event.

Left to right: H. B. Vickery, President of the Dannevirke A. & P. Association; G. N. Buchanan, President of the Dannevirke Y.F.C.; W. McLaren, Past President of the Federation; H. S. M. Quigley, Secretary of the Dannevirke A. & P. Association and the Southern Hawke's Bay Farmers' Union; J. W. Palmer, Department of Agriculture, Hastings.

[*K. Bateman, Photo.*

Among the Clubs: Reports on Activities

Western Southland.

(District Secretary, A. Stuart, Department of Agriculture, Invercargill.)

Dipton (Secretary, J. R. Palmer, Dipton R.D., Southland).

Drummond (Secretary, J. R. Hubber, Oreti, R.D., Winton, Southland).—Club debate, "Horses v. Tractors." At the previous meeting Mr. E. S. Thomas gave an address on "Opportunities Afforded to Members of the Young Farmers' Club Movement."

Lochiel (Secretary, J. S. Forbes, Invercargill-Otahuti R.D., Southland).—Five-minute speeches were given by members on "What has been of the Greatest Benefit to Agriculture in New Zealand during the past Twenty-five Years?" Open class: J. Clark, 1; J. McThomson, 2; W. Clark, 3. Junior Class (18 years and under): A. Diack, 1. Messrs. C. Buxton and Simpson were the judges. Mr. Buxton afterwards addressed members on "The Importance of Miniature Rifle Clubs in Relation to Defence."

Thornbury (Secretary, K. E. McKenzie, Wrights Bush-Gladfield R.D., Sec. 5, Invercargill).—Committee appointed to draw up programmes for rest of year. Meetings to be held fortnightly. Mr. J. K. Kilby, London, addressed the meeting on "The Marketing of Meat at Smithfield," illustrated by lantern slides of carcasses exhibited by Mr. W. R. Harris. A report on the Otago-Southland council meeting was given by D. Fallow.

Woodlands (Secretary, L. Middlemiss, Woodlands, Southland).—Club debate, "That Democracy is better than Dictatorship"; speakers, A. Campbell, A. Clay, and T. Taylor (affirmative); L. Middlemiss, H. Clay, J. Henderson, and C. O'Rourke (negative). Many interesting points were raised, including a summary of the world's history.

Wyndham (Secretary, Andrew Howe, Box 40, Wyndham, Southland).—Arranging of club programme. Report on the District Committee meeting. Arrangements for debating competition. Discussion on how to improve the attendance at club meetings and also the membership of the club. Three-minute talks by every member present on subjects of their own selection. At the previous meeting an address on "The Marketing of Farm Produce" was given by Mr. L. Harper.

Eastern Southland.

(District Secretary, W. Faithful, Department of Agriculture, Gore.)

Balfour (Secretary, J. S. George, Balfour-Glencoe R.D., Balfour, Southland).—Club debate, "That Tractors are Superior to Horses." Mr. Witting acted as judge.

Crookston (Secretary, D. Rea, Crookston R.D., Southland).—Arrangements for a debate. Address by Mr. J. A. Hodgkin, of the Moa Flat Club, on "Weather and Weather Forecasting." At the previous meeting Mr. H. Duff, Moa Flat Club, gave a talk on "Life at Lincoln College."

Five Rivers (Secretary, B. Selbie, Eyre Creek, Five Rivers, Southland).—Debate with Lumsden Farmers' Union, "Horses v. Tractors." Speakers, Messrs. I. Wills, W. Heenan, G. Muir, R. Currie (Farmers' Union), A. Rouse, M. Reitcheson, B. Selbie, and A. Drummond (Y.F.C.). The club team spoke in support of tractors, and won by a narrow margin.

Maitland (Secretary, W. R. Thayer, Gore-Waikaka R.D., Southland).—Team selected for Eastern Southland debating contest. A lecture on "Cobalt" was given by Mr. Sandys-Wunch. At the previous meeting a club debate was held, the subject being "That the Young Farmer of Today has Greater Opportunities than his Grandfather." Leaders were H. P. McIntyre and R. S. White.

Moa Flat (Secretary, H. Love, Moa Flat, Heriot, Southland).

Otama (Secretary, L. G. McKay, Otama R.D., Gore, Southland).—Members notified of stock-judging at Lincoln, and the Educational Week at Dunedin. Club field day to be arranged. Team selected for inter-club debates. A report on the North Island tour was given by Mr. J. Brand, who took part, and an address on "The Early History of Otama" was given by the advisory president, Mr. Donald Bruce.

Waikaka (Secretary, C. H. Kerse, Box 1, Waikaka, Southland).

South Otago.

(District Secretary, A. F. Greenall, Department of Agriculture, Balclutha.)

Clinton (Secretary, Robt. Roy, Clinton, Otago).—Business meeting. Club syllabus drawn up. After all business had been discussed the evening closed with a few musical items.

Lawrence (Secretary, R. T. Geeves, Waitahuna, Otago).—"Magazine Night." Four members selected to attend the Dunedin Educational Week.

Milton (Secretary, D. Tweedie, C/- Mr. D. Clark, sen., Moneymore R.D., Milton, Otago).—Programme for the year drawn up. Debate to be held with the Lawrence Club. Lecture by Mr. M. G. McDonald, M.R.C.V.S., on "Parasites in Animals."

Stirling (Secretary, L. G. Bell, Stirling, Otago).—Lecture by Mr. H. C. Grace on "The Pasteurisation of Milk."

Warepa (Secretary, E. S. Cross, Warepa, Otago).—Report on club ball: profit of £2 4s 4d. Lecture by Mr. G. McDonald, Veterinarian, on "Internal Parasites of Horses and Sheep."

Central Otago.

(District Secretary, G. G. Calder, Department of Agriculture, Alexandra.)

Alexandra (Secretary, L. C. Kinraid, "Earnscleugh," Alexandra).—Business meeting. Discussion re football match, appointment of new trustees. The club entertained members of the local Junior Home-makers' Club at a social evening, dancing, games, etc.

Arrowtown (Secretary, R. W. Brown, "Islay," Lower Shotover, Central Otago).

Manuherikia (Secretary, D. Armitage, Lauder R.D., Becks, Central Otago).

Roxburgh (Secretary, L. George, Roxburgh, Central Otago).—Social evening in conjunction with the Roxburgh Haeremai Club. Travel films exhibited by Mr. S. R. Whyte, Hon. Secretary, Otago-Southland Council.

Upper Clutha (Secretary, T. G. Anderson, Box 13, Pembroke, Central Otago).—Lecture by Mr. G. G. Calder, Department of Agriculture, on "Science and its Relation to Agriculture."

Dunedin.

(District Secretary, S. H. Saxby, Department of Agriculture, Dunedin.)

Middlemarch (Secretary, J. Howell, "Stonehurst," Middlemarch, Otago).

Palmerston South (Secretary, N. Hitchcock, Palmerston, Otago).—Exhibition of sound and silent films by Mr. S. H. Saxby, Department of Agriculture, "Seed Germination," "Reproduction in Mammals," "Hereditary," etc.

South Taieri (Secretary, A. M. McKenzie, Berwick, Otago).—Final arrangements for ploughing match and dance. Discussion re debate with West Taieri Club.

West Taieri (Secretary, D. Doherty, Outram, Otago).—Exhibition of sound and silent films by Mr. S. H. Saxby, Department of Agriculture.

North Otago.

(District Secretary, T. A. Sellwood, Department of Agriculture, Oamaru.)

Duntroon (Secretary, K. C. Williamson, Duntroon, Otago).—Business meeting. Arrangements for a trip to Waitaki High School.

Enfield (Secretary, D. S. Anderson, C/- Mr. W. Malcolm, Sec. 4aD, Oamaru R.D.).

Five Forks (Secretary, I. D. Kingan, 15D, R.D., Oamaru).—Exhibition of sound films on agricultural and general subjects. The meeting was an open one, and there was an attendance of 55.

Hampden (Secretary, J. C. Nicholson, Hampden, Otago).—Exhibition of sound films on agricultural and general subjects.

Papakaio (Secretary, J. S. Gibson, Papakaio, Otago).—Exhibition of sound films on agricultural and general subjects.

Tokorahi (Secretary, T. McLean, Island Cliff, Section 9C, R.D., Tokorahi, Otago).—Exhibition of sound films on agricultural and general subjects.

Upper Waitaki (Secretary, G. A. McLean, Hakataramea, Otago).—Lecture by Mr. T. A. Sellwood, Department of Agriculture, on "Linen Flax."

Waitaki-Hilderthorpe (Secretary, B. A. Paton, Pukeuri, Otago).—Exhibition of sound films on agricultural and general subjects.

South Canterbury.

(District Secretary, C. C. Leitch, Department of Agriculture, Timaru.)

Albury (Secretary, M. Stevens. "Fairford," Ma-Wara, South Canterbury).—Debate with members of the Farmers' Union, the subject being "That the Young Farmers of Today have better opportunities of Success than their Fathers." The club team spoke in support of the negative, gaining 199 points against 236 points scored by the Farmers' Union. Mr. B. L. Elphick acted as judge. At meetings recently reported a lantern lecture on "Liming" was given by Mr. D. G. Wraight, an address on "Bush Farming in the North Island" was given by Mr. J. E. Stevens, and a club debate was held, "It is More Desirable to Live in the Country than in the Town."

Arno (Secretary, T. Rolfe, Waihao Forks, Waikakahi, R.M.D., Waimate, South Canterbury).—Club debate: Junior, "That the Advent of the White Man has been of Benefit to the Maori." Speakers, R. Lindsay, T. Rolfe, R. Corbett (affirmative); G. McKenzie, C. Lindsay, M. Olerenshaw (negative). The debate was won by the negative. Senior, "That it would be in the Interests of Mankind if all the Governments of the World were handed over to the Women." Speakers, C. Verity and C. Olerenshaw (affirmative); I. Ross and B. Moyle (negative). This debate was won by the negative also.

Cannington-Cave (Secretary, R. McKenzie, Cave, South Canterbury).—Report on South Canterbury District Committee meeting. Club debates, as follows:—"That Blade-shearing is Superior to Machine-shearing" and "That the Tractor will eventually take the place of Horses on the Farm." The affirmative won the former debate by 26 points to 23, and the latter debate resulted in a draw.

Fairlie (Secretary, P. F. Carter, Sherwood Down, R.D., Fairlie, South Canterbury).—Club debate held under Oxford Union rules on a subject dealing with 'Collective Farming." C. Goulter opened for the affirmative and B. J. O'Neill led the negative. All members present took part.

Geraldine (Secretary, J. A. Thatcher, Orari Bridge, Geraldine, South Canterbury).—Competitors selected to take part in the South Island stock-judging competitions at Lincoln. Movie films on "Caterpillar Tractors" exhibited and explained by Mr. M. Mahan. At the previous meeting films on "Beauty Spots in the South Island" were exhibited.

Hunter (Secretary, J. D. Gregan, Hunter R.D., Waimate, South Canterbury).—Members notified of short course at Lincoln and the South Island stock-judging competitions. Decided to place on record the success of the club members, W. Clark and I. Cooper, who gained first and second places respectively in the recent district oat-stacking competition. Address by the Rev. Malcolm Wilson, entitled "England and its People."

Maungati (Secretary, D. B. Neale, Maungati R.D., Waimate, South Canterbury).

Milford (Secretary, G. D. Crossman, Milford, Temuka, South Canterbury).—Discussion re ploughing demonstration. Arrangements for debates. Movie films on "Caterpillar Tractors" exhibited and explained by Mr. M. Mahan. A visit was made to the fish hatchery and Temuka flour mill; Mr. Pellet (the ranger) showed members round the hatchery, explaining the various operations in connection with it; the party were then conducted around the flour mill, and finally entertained by Mr. Smart (the managing director) to afternoon tea. At a previously unreported meeting the question of various trips was discussed, and Mr. Bolderston gave an interesting talk on his "Life at Sea," dealing especially with the war period.

Morven (Secretary, L. G. Paul, Waikakahi R.D., Waimate, South Canterbury).

Pleasant Point (Secretary, S. F. Jackson, Pleasant Point, South Canterbury).

Southburn-Lyalldale (Secretary, K. Caird, Southburn R.D., Timaru).—Discussion on District Committee meeting. Impromptu speeches, each member present taking part. At the previous meeting Mr. D. G. Wraight gave a lantern lecture on "Lime Requirements of Soils."

Waihaorunga (Secretary, H. A. Brown, C/- Mr. T. Armstrong, Pentland Hills R.D., Waimate, South Canterbury).—Evening devoted to impromptu speeches on farming topics, all members participating; speakers were allowed five minutes each, and the remaining members were given time for discussion. At the previous meeting a lecture and demonstration on "First Aid" was given by Dr. Wylie. It was decided to hold fortnightly euchre parties and dances in aid of the club funds.

Mid-Canterbury.

(District Secretary, R. Inch, Department of Agriculture, Ashburton.)

Ashburton (Secretary, J. J. Burrowes, Chertsey, Ashburton).—Mr. Werry spoke on "The Judging of a good Beef Cow and of a good Milking Cow." A. Bennett gave a talk on "Establishing a Bush Farm in 1914."

Hinds (Secretary, W. S. Keeley, "Stonehaven," Box 8, Hinds, Ashburton).—Arrangements for debate at Methven. Report on flock ewe competition. Illustrated lectures on C.Y.C. by Colonel Nicholl.

Mayfield (Secretary, F. R. Morrow, Mayfield, R.D., Ashburton).—Selection of team to compete in South Island stock-judging competitions at Lincoln. Arrangements for a debate. Mr. T. K. Ewer, Veterinarian, Department of Agriculture, gave a lecture on "Veterinary Science and the Farmer of the Future." The speaker dealt with past research and also the possible future assistance to the farmer from (a) the geneticist, (b) the chemist and dietitian, and (c) the bactereologist. At the previous meeting Mr. R. Inch, Department of Agriculture, spoke on 'Trees," dealing with shelter, ornamental and timber species.

Methven (Secretary, T. A. Richards, Box 74, Methven, Canterbury).—Discussion on South Island stock-judging competitions at Lincoln, as many members as possible to compete. Members each gave a five-minute talk on a subject of their own selection, L. Bush and C. Wightman tied for first place. Messrs. R. Tuck and A. G. Gerard acted as judges.

Christchurch.

(District Secretary, R. G. Jolly, Department of Agriculture, Christchurch.)

Darfield (Secretary, B. E. Jarman, Box 5, Darfield, Canterbury).—Arrangements for debates with Darfield Farmers' Union and also with the Methven Club. Names of several members forwarded to Courtenay A. and P. Association as competent junior judges. Address by Mr. H. J. Buttle on "Experience Overseas."

Dunsandel (Secretary, A. T. Wright, Dunsandel, Canterbury).—Circular re recruiting discussed. Challenge to be issued to Ellesmere Club to a football match.

Ellesmere (Secretary, D. Hurford, Doyleston, R.M.D., via Christchurch).—Address on Y.F.C. Affairs by Mr. S. Freeman, Dominion Organising Secretary; Mr. Freeman also exhibited some sound films on subjects of general interest.

Hororata (Secretary, J. Williams, Hororata, Canterbury).

Ladbrooks (Secretary, L. Carpenter, Prebbleton, Canterbury).

Little River (Secretary, R. J. Chapman, Little River, Canterbury).

Springston (Secretary, C. Bailey, Springston, R.D., Canterbury).—Delegate reported on the recent District Committee meeting. Invitation accepted from the Springston Girls' Club to a card evening. Mr. W. J. Parett, Springston, gave an account of his recent "Trip Abroad to China, Japan, and Australia.

Teddington (Secretary, P. A. de Pass, Ataahu, Christchurch).—Address by Mr. Bruce Duncan on "Barley from the Malster's Point of View."

West Melton (Secretary, G. G. Calder, Halkett, R.M.D., Canterbury).—Arrangements for first annual ball. Appointment of junior judges to be nominated by the Courtenay A. and P. Association for inclusion in the official list of judges. Offer of £1 donation received from the local branch of the Farmers' Union for competition amongst members at the Courtenay-Paparaua ploughing match.

North Canterbury.

(District Secretary, A. S. Nash, Department of Agriculture, Rangiora.)

Amberley (Secretary, G. Wornall, Amberley, Nth. Canterbury).—Business meeting. Invitations from Amberley Farmers' Union to a social

evening, and from the W.D.F.U. to their birthday dance. Arrangements for the club's annual dance.

Amuri (Secretary, T. Harold Belton, Waiau, North Canterbury).

Cheviot (Secretary, A. C. Mowat, Leamington, Cheviot, Nth. Canterbury).—Arrangements for short talks by members at next meeting. Address by Mr. A. S. Nash, District Secretary, on "The Young Farmers' Club Movement." Talk by Mr. C. Mackenzie on "The Tour to the West Coast by members of the Scargill-Omihi Club."

Cust (Secretary, A. McIntosh, Horrelville, Rangiora, R.M.D., Nth. Canterbury).

Hawarden (Secretary, A. B. Dalzell, Mason's Flat, Hawarden, Nth. Canterbury).—Invitation to Amuri Club's field day. Arrangements for combining with the W.D.F.U. in their annual ball.

Oxford (Secretary, W. Ian Cray, Oxford, Nth. Canterbury).

Scargill-Omihi (Secretary, T. G. Maxwell, Motunau, Nth. Canterbury).

Westland.

(District Secretary, A. D. Mercer, Department of Agriculture, Greymouth.)

Murchison (Secretary, J. Boland, Longford, Murchison).

Nelson.

(District Secretary, D. Merry, Department of Agriculture, Nelson.)

Dovedale (Secretary, P. J. Burnett, R.M.D., Wakefield, Nelson).—Annual club dog trials; details given elsewhere in a separate paragraph.

Motueka (Secretary, A. E. Wratt, "The Grange," Motueka, Nelson).

Motupiko (Secretary, G. V. Nicholls, Korere, Nelson).

Moutere (Secretary, B. L. Benseman, Neudorf, R.M.D., Upper Moutere, Nelson).—Business meeting. An officer of the Defence Department to be asked to give an address at the next meeting. Final arrangements for debate with Dovedale Club. At the meeting talks were given by members on their meeting with the Wairarapa touring members in Nelson.

Marlborough.

(District Secretary, D. R. Wilkie, Department of Agriculture, Blenheim.)

Blenheim (Secretary, T. M. Walsh, Blenheim).—R. Litchfield, J. Cresswell, and M. Walsh elected to join with Seddon and Flaxbourne representatives to form the "show parade" executive. Club to challenge the winner of a debate between Seddon and Flaxbourne clubs. Address by Mr. J. B. Laidlaw, advisory president, on "Dog Trials and the Breeding and Working of Dogs." A club debate was held at the previous meeting, the subject being "Agricultural Farming v. Grassland Farming." The team supporting grassland farming were declared the winners.

Flaxbourne (Secretary, R. Sharpe, Ward, Marlborough).—The proposed Y.F.C. Centennial tree-planting scheme was discussed. Lecture by A. Neal on "The Bren Gun."

Seddon (Secretary, R. S. Dysart, Seddon, Marlborough).

Wairarapa.

(District Secretary, N. Lamont, Department of Agriculture, Masterton.)

Alfredton (Secretary, N. C. Napier, "Strath Eden," Eketahuna).

Ballance (Secretary, H. C. Wilton, Ballance R.D., Pahiatua).—Farewell evening to Mr. I. H. Bremner, who was leaving to be married, and later taking up a position as farm manager at Greytown. Mr. Bremner was presented, on behalf of the settlers of Ballance, Mangahao, and Mako Mako, with a handsome chiming clock. The evening was spent in dancing interspersed with musical items. Mr. I. H. Bremner was one of the foundation members of the Ballance Club, and has been club chairman for a number of years.

Carterton (Secretary, Mr. Knutson, Dalefield, Carterton).—Arrangements for a ping-pong match with the Masterton Club and also for club birthday dance. Mr. M. J. Scott, Superintendent of the Pig Industry, presented three short films on "Genetics" and "Disease in Swine" and answered a number of questions. Local farmers were also present.

Eketahuna (Secretary, E. M. Wright, Nireaha, Eketahuna).

Featherston (Secretary, J. W. Feast, Western Lake Road, Featherston).—Debate with Masterton Club, the subject being "That a Dairy Farm Requires more Managerial Ability than a Sheep Farm." Speakers, G. Blatchford, J. McKay, and D. McGregor (Masterton): D. Benton, N. Nix, and D. Pearce (Featherston). The judge, Mr. R. Donald, Featherston, awarded the contest to the Masterton team. At a later meeting arrangements were made for the annual club ball, and Mr. M. J. Scott, Superintendent of the Pig Industry, exhibited films on "Diseases in Swine," etc. An interesting talk was also given by Des. McKenna on his tour of the South Island with the Wairarapa Y.F.C. party.

Greytown (Secretary, V. H. Gates, Greytown).—Arrangements for field day. Lecture by Mr. N. Lamont, Department of Agriculture, on "Food Values of Pastures and Stock."

Mangatainoka (Secretary, H. McG. Rentoull, C/- Mr. G. O. Anderson, Hinemoa, Pahiatua).

Martinborough (Secretary, Mr. H. R. Ronalds, "Fairlie," Martinborough).—Question evening on "Lambing Troubles." Mr. Armstrong, Veterinarian, in attendance.

Masterton (Secretary, C. A. Mackay, "Hillsworth," Wangaehu, Masterton).—Discussion re district essay competition. Invitation to Tinui Club's annual dance. Arrangements to visit Wallaceville Laboratory. Presentation to Owen Wyeth, shortly to be married. Short talks on the Wairarapa members' tour of the South Island, given by D. McGregor, C. Welsh, K. McGillivray, D. McLachlan, and C. Mackay.

Pongaroa (Secretary, T. E. Hall, Pongaroa, via Masterton).

Tinui (Secretary, R. Spooner, Whareama, Masterton).

Manawatu.

(District Secretary, H. de O. Chamberlain, Department of Agriculture, Palmerston North.)

Apiti (Secretary, H. McIntyre, Ridge Road, R.D., Apiti, Feilding).—Mr. E. E. Elphick, Government Veterinarian, gave an address on matters of interest to farmers.

Bunnythorpe (Secretary, MacGregor Donald, Newbury Line, R.D., Palmerston North).—Films dealing with "Stumping" and "Germination of Seeds" exhibited by Mr. L. Earl, Department of Agriculture.

Colyton (Secretary, C. Burr, Spur Road, R.D., Feilding).—Arrangements for annual concert and dance. Mr. Kenneth Krammer, a geologist employed by an American oil company at present conducting a geological survey in New Zealand, gave an address on "Geology as Applied to the Search for Oil." The speaker answered many questions in connection with the search for oil in New Zealand and also relative to the oilfields in U.S.A. At the previous meeting a club debate was held, all members present taking part. A team consisting of C. Burr, L. Thurston, and N. Williamson was selected to debate against the Waituna Club.

Feilding (Secretary, R. W. Durrant, Box 34, Feilding).—Report on annual dance, showing a profit of £7 6s 6d. Messrs. A. W. Hudson (Massey College) and Bruce McLeod gave an interesting combined lecture on "Mole Draining."

Fitzherbert (Secretary, J. D. Woodley, Aokautere, Palmerston North).

Halcombe (Secretary, G. Buchanan, Mt. Biggs, R.D., Feilding).—Team selected for Viles Shield debate. Mr. E. M. P. Swainson, of Feilding, exhibited a film taken during his trip to Great Britain, Europe, and America.

Wairarapa District Committee, 1939.

(From Left): Front row.—S. Morris, S. Fisher, G. Blatchford, I. Algie, W. Holdaway. *Second row.*—J. H. Bremner, W. F. McLaren, G. E. Allen, N. Martin (Vice-President), W. James (President), H. M. Linklater (Chairman Wellington Council), Sir William Perry, H. M. Boddington (Hon. Treasurer). *Third row.*—R. Burke, G. Cotter, D. McGregor, E. M. Wright, H. C. Pearce, C. H. Mills, J. L. Heckler, H. Bennett, E. Belliss, N. Lamont (Secretary). *Back row.*—F. B. Rossitter, J. F. Bremner, A. Fisher, H. McKenzie, M. Knutson, D. McLachlan, C. Welch, K. McGillivray, J. S. Mackay.

Johnsonville (Secretary, G. Bryant, Ohariu Valley, Johnsonville).

Kairanga (Secretary, I. Fraser, Box 9, Longburn).—Social evening, various members contributing items, followed by a short dance. Mr. H. de O. Chamberlain, Department of Agriculture, gave an address on "The Y.F.C. Movement in Great Britain" and a travel talk on "English Rural Districts."

Kimbolton-Kiwitea (Secretary, C. F. Tappin, Kimbolton R.D., Feilding).—Arrangements for dance. Reports on Viles Shield debate and the Wellington Council meeting. Members who took part in the Manawatu tour of the South Island gave descriptions of their trip.

Levin (Secretary, F. J. Rolston, Ihakara, Levin).—Arrangements for field day. Talks were given by R. Buchanan and V. C. Lewis on "The Judging of Sheep" and "The Judging of Cattle" respectively.

Opiki (Secretary, L. Young, Fitzherbert West, R.D.).

Oroua Downs (Secretary, J. E. Dench, Oroua Downs).—Arrangements for a lecture by a recruiting officer. Cup donated by the club to the Oroua Downs School for its calf club. Golf match to be held with Raumai. Arrangements for dance. Address by Mr. G. Buchanan on "The Identification of Grasses and Their Respective Merits in the Pasture." At the previous meeting an address was given by Mr. Marsden on "Stock Diseases and Other Troubles on the Farm."

Otaki-Te Horo (Secretary, F. S. Elliott, Otaki).—Debate with the Kairanga Club; won by Kairanga by a small margin.

Paraparaumu (Secretary, H. W. Holland, Box 35, Paraparaumu).

Pohangina Valley (Secretary, A. Macdonald, Ashhurst).—Discussion with members of the Farmers' Union. Lecture by Mr. C. L. Turnbull, of the Free Ambulance, on "Rescusitation."

Rangiotu (Secretary, I. Bond, Rangiotu R.D., Palmerston North).

Rangiwahia (Secretary, K. O'Dwyer, Rangiwahia, via Feilding).—The meeting dealt mainly with the formation of a troop to be attached to the Queen Alexandra Mounted Rifles. This matter was left in the hands of the members interested. Captain Barrington spoke on the "Recruiting Campaign" and Major Laws gave a talk on the "Training and Equipment of a Troop of Mounted Rifles." At the previous meeting Mr. L. Pemberton gave an address on "Bees."

Rongotea (Secretary, J. H. Gibbons, P.B., Rongotea).—Report on dance. Selection of debating team. Discussion re seven-a-side football. Address by Mr. M. H. Oram on "Public Speaking and Debating."

Shannon (Secretary, C. Watson, c/o Mr. G. G. Mitchell, Shannon).—Club adjourned during the meeting to the local blacksmith's shop, where Mr. W. Clough gave a talk on "The Setting of a Plough."

Tokomaru (Secretary, K. R. Whyte, Box 1, Tokomaru).—Business meeting. Discussion re dance, election, of members, etc.

Waituna (Secretary, I. H. Old, Cunninghams R.D., Feilding).—Arrangements for club debate. Talk by Mr. H. de O. Chamberlain, Department of Agriculture. Talks by R. and A. Meads on the Manawatu tour of the South Island.

Whakarongo (Secretary, R. G. Scott, jun., Whakarongo R.D.).—Debating team selected. Posters for club ball distributed. Talks by members as follows:—"Motor Racing" (G. Spall); "Advantages of Baled Hay" (I. Tabor); "Gold Mining in Thames" (R. Berry).

Woodville (Secretary, A. Compton, Hopelands, Woodville).—Lecture on "Potato-growing," by Mr. J. P. Gloyn, of the Rongotea Club. A friendly debate was also held with a team from Rongotea, who accompanied the lecturer. The subject was "That the Tractor Can Economically Supersede the Horse for General Farm Work." The Woodville team were declared the winners.

Wanganui.

(District Secretary, A. R. Dingwall, Department of Agriculture, Wanganui).

Bulls (Secretary, S. H. Last-Harris, Parewanui Road, Bulls).—Field day, including dog trials, to be held. Address on the Hastings Educational Week by C. B. Anderson.

Hunterville (Secretary, A. Cameron, Ongo Road, Hunterville).—Address by Mr. R. M. S. Jones on "Lease and Tenure." At previous unreported meetings a lecture was given by Mr. Hill Motion, Veterinarian, on "Stock Management in Relation to Disease," and Dr. Burnett delivered an address on "The History of Medicines and First Aid."

Mangaweka (Secretary, J. Reilly, Mangaweka).—Discussion re proposed debate. Mr. C. Newport, Inspector of Stock, read and explained the Stock Act and gave a talk on "Hydatids and General Diseases in Stock."

Marton (Secretary, H. C. Kimpton, Box 40, Marton).

Taihape (Secretary, R. O. Batley, Moawhango, Taihape).—Discussion on the district essay competition and the recruiting campaign. Arrangements for a field day. Talk on "Practical Beekeeping," by C. Fannin, a club member.

Waimarino (Secretary, V. Whale, Rangitaua, Main Trunk).

Westmere (Secretary, C. Goldstone, Brunswick, Wanganui).—Arrangements re Wanganui Educational Week, preparations, etc. Address by Mr. G. Crawley on "The Early Days in Westmere and Brunswick." At the previous meeting Mr. I. Currie spoke on "The Functions of the Meat Producers' Board"; he also gave some of his experiences in the district in the early days.

South Taranaki.

(District Secretary, J. E. Davis, Department of Agriculture, Hawera).

Alton (Secretary, G. Garnett, Alton, Taranaki).

Eltham (Secretary, L. R. Sultzberger, Eltham).—Selector chosen for ten-a-side football tournament. Lecture on "Democracy and Youth" by Mr. A. H. R. Amess, of the Stratford District High School.

Hawera (C. G. Washer, South Road, Inaha, Hawera).

Kaponga (J. J. Kissick, Box 68, Kaponga, Taranaki).

Lowgarth (J. F. Sultzberger, Lowgarth, Taranaki)

Pukengahu (G. L. Burgham, Wingrove Road, Pukengahu, Stratford).

Waverley (W. P. Matthews, Box 26, Waverley).

Whakamara-Mokoia (Secretary, J. Buckrell, Whakamara, Taranaki).

Whenuakura (Secretary, J. Fairweather, Private Bag, Patea).

North Taranaki.

(District Secretary, G. A. Blake, Department of Agriculture, New Plymouth).

Cardiff (Secretary, W. Brunton, Cardiff).—Team selected for 10-a-side football tournament. Arrangements for club programme. At the previous meeting Mr. S. Freeman, Dominion Organising Secretary, gave a talk on the Y.F.C. Movement and exhibited sound films of general interest.

Hillsborough-Tarurutangi (Secretary, N. T. Sampson, Hillsborough, New Plymouth).

Inglewood (Secretary, H. J. Clough, Inglewood).—Selection of two football teams, a seven-a-side and a ten-a-side. Talk by Mr. E. Rowan on "The Differences in Breeds of Sheep"; address by Mr. M. Sutton on "European Politics"; and short address by H. Chard on the Hastings Education Week. Members of the club spent a day visiting four farms in South Taranaki: Mr. Ogle's pig farm at Normanby, the Moore-Hunter Estate, Hawera; Mr. Gibbon's farm at Kaponga, and Mr. S. G. Morgan's Jersey stud at Mangatoki. The trip was arranged by the Eltham Club.

Karawaka (Secretary, L. V. Oliver, Lepperton, Taranaki).—Debate with the Hillsborough-Tarurutangi Club, the subject being "Dairying v. Mixed Farming." Speakers: R. Anderson, L. Copestake, D. A. Anderson, R. Dixon, N. Warren, and B. Sinclair (Hillsborough-Tarurutangi); M. Loveridge, P. Blyde, N. Tate, G. Blyde, B. Brooking, and K. Lattimer (Karawaka). Mr. C. B. Lepper, the advisory president of the Karawaka Club, acted as judge, and awarded the decision to the Hillsborough-Tarurutangi team, who supported mixed farming.

Mangamahoe (Secretary, L. Mace, Kent Road, R.D., New Plymouth).—Competition to raise funds for the club; won by H. Rowlands. The advisory president, Mr. A. H. Jordan, gave a talk concerning the Wellington Council meeting.

Mangorei (Secretary, E. O. Balsam, Upper Mangorei, New Plymouth).

Midhurst (Secretary, J. L. Hunt, Radnor Road, Midhurst).

Okau-Tongaporutu (Secretary, K. Calvert, Ahititi, New Plymouth).—Business meeting; discussion on club affairs generally.

Omata (Secretary, T. Walsh, Hurford Road, R.D., New Plymouth).

Rahotu (Secretary, R. G. Dawson, Rahotu, Taranaki).—Discussion on Territorial recruiting campaign. Team selected to compete in football tournament at Waitara. A review of the Wanganui Education Week was given by members who attended—N. J. Hopkins, J. D. Billing, R. G. Dawson, R. W. Morgan, L. H. Butler, and A. H. R. Billing. At the previous meeting an address was given on "Early Settlement and Dairying in Taranaki."

Tarata-Pukeho (Secretary, Mr. M. George, Purangi R.D., Inglewood).

Tikorangi (Secretary, G. Jupp, Box 27, Tikorangi, New Plymouth).—Business meeting. Discussion re projected Y.F.C. seven-a-side football tournament at Waitara. Arrangements for a debate with local Boys' and Giris' Agricultural Club. A table-tennis tournament was successfully carried out, the winner being Mr. A. Hopson, with Miss P. Hopson as runner-up.

Toko (Secretary, W. H. Needham, Toko, Stratford).—Talk by Paul Cook, a member of the North Taranaki Y.F.C. party recently touring New South Wales.

Urenui (Secretary, K. Phillips, Waitoitoi, New Plymouth).

Wharehuia (Secretary, A. B. Thomson, Beaconfield Road, Stratford).

Southern Hawke's Bay.

(District Secretary, J. W. Palmer, Department of Agriculture, Hastings).

Dannevirke (Secretary, K. Bateman, Box 38, Dannevirke).

Hastings (Secretary, H. M. Campbell, Box 128, Hastings).—Club debate: "That Hill Country in Hawke's Bay is More Suitable for Sheep-farming than the Heretaunga Plains"; won by the affirmative. Address on "Home Defence" by Lieutenant Crossman. A field day was held at Mr. R. Nimon's Southdown stud, Havelock North, able demonstration being given by Mr. Nimon to an attendance of 25.

Norsewood (Secretary, B. D. Anderson, R.D. Norsewood, H B.).

Onga Onga (Secretary, Clive H. Masters, Onga Onga, H.B.).—Arrangements for a debate. Talk on "Road Safety," by Mr. Lock, chief patrol officer, Hawke's Bay Automobile Association.

Takapau (Secretary, M. N. Tilley, Takapau, H B.).—Talks by members who attended the Hastings Educational Week, as follows:—"A Trip Through the Esk Valley" (P. Tennent); "The Herald Printing Office" (F. Fox); "The Southern Cross Biscuit Factory" (L. Thomson), A lecture was given by Mr. A. Laing, Government Veterinarian, on "Diseases in Stock." A field day was held on Mr. de Stacpoole's property. Demonstrations included the following: "Plough-setting" (Mr. D. McMillan), "Fencing" (Mr. S. Thomsen), "Romneys" (Mr. C. H. St. Hill), "Conservation of Fodder" (Mr. J. W. Palmer), "Dorset Horns" (Mr. C. L. Crooks), "Dog Trials" (Mr. R. McDonald), "Herefords" (Mr. L. Stuckey), "Southdowns" (Mr. C. Edgecombe). Competitions and novelty events were also held. There was an attendance of over 100.

Tikokino (Secretary, H. H. Eddy, Tikokino R.D., Waipawa).

Waipukurau (Secretary, J. J. Mackie, Porangahau Road, Waipukurau).—Arrangements for social. Address by Mr. L. M. Manchton on "Farm Timber and the Planting of Different Species of Trees."

Northern Hawke's Bay.

(District Secretary, R. P. Hill, Department of Agriculture, Hastings).

Matapiro (Secretary, H. Pearce, Box 32, Hastings).—Short address by Mr. M. Connor, Omapare, regarding the Patangata ploughing match, dog trials, and horse events, especially urging members to enter for the Y.F.C. hogget classes. Lecture by Mr. Fulton, wool expert, N.Z. Loan and Mercantile Agency Co., Ltd. Mr. Fulton illustrated his lecture by means of samples of wool, tops, etc. A very successful dance was held by the club at Sherenden.

Meeanee (Secretary, J. H. McGrath, Meeanee, Napier).

Nuhaka (Secretary, W. J. Alexander, Nuhaka, H.B.).

Putorino (Secretary, E. Smyth, P.O. Raupunga, H.B.).

Wairoa (Secretary, W. G. Brownlie, Fraser-town, Wairoa, H.B.).

Poverty Bay.

(District Secretary, E. M. Bates, Department of Agriculture, Gisborne).

Gisborne (Secretary, J. L. Munro, Box 47, Patutahi, Gisborne).—Donations of supper requirements for district committee's ball. Arrangements for debate with Gisborne Young Business Men's Club; sub-committee appointed to select debating team, etc. Lecture by Mr. E. J. Simmons, Government Veterinarian, on "Diseases in Stock." Address by Mr. E. M. Bates, Department of Agriculture, on "Manuring."

Matawai (Secretary, G. Korte, Matawai, Gisborne).

Te Karaka (Secretary, J. H. Bayley, Te Karaka, Gisborne).

Tolaga Bay (Secretary, D. G. Grail, Box 48, Tolaga Bay).

Taumarunui.

(District Secretary, J. M. Hopkins, Department of Agriculture, Taumarunui).

Ohura (Secretary, C. J. Ryan, Niho Niho, Ohura, Main Trunk).—Election of new members. Mr. J. M. Hopkins, District Secretary, spoke on the success of the Y.F.C. Court at the Taumarunui Winter Show. Mr. N. J. B. Dougherty, advisory president, spoke on "The Conduct of Meetings," dealing especially with the duties of the chairman, secretary, and treasurer.

Taumarunui (Secretary, L. G. Smith, Patunga, Taumarunui).—Discussion on field day. Outline of club dance. Address by Mr. Brenton-Rule on "Taxation and Bookkeeping on the Farm."

Te Kuiti.

(District Secretary, K. M. Montgomery, Department of Agriculture, Te Kuiti).

Aria (Secretary, W. Evans, Aria, Te Kuiti).

Otorohanga (Secretary, C. G. Murphy, Te Kuiti, Otorohanga).—Report on club ball, profit of £4 5s 1d. Club debate: "That the Young Farmer of Today has a Better Chance of Success than his Grandfather." Speakers: C. Murphy, E. Muir, T. and M. Shields (affirmative); S. Tye, J. Clarke, H. and L. Strawbridge (negative). The negative team won by 35 points to 25. A field day was held on the Waikato Land Settlement Society's block at Kairanga; Mr. D. V. Bryant spoke on the workings of the society and also briefly discussed agriculture as he had recently seen it in Germany.

Te Anga (Secretary, H. C. Goddard, R.D., Te Kuiti).

Eastern Bay of Plenty.

(District Secretary, C. R. Taylor, Department of Agriculture, Whakatane).

Edgecumbe (Secretary, A. R. N. Briggs, Onepu R.M.D., Whakatane).—Arrangements re football match with Waimana, also hay and ensilage competitions. Address by Captain Yeoman, Taneatua, on "The Necessity of Military Training in New Zealand."

Opotiki (Secretary, B. F. Gilmore, Box 4, Opotiki).—Club member nominated as representative on the A. and P. Association. Discussion on "Recruiting," led by the advisory president. Friendly debate with Waimana Club: "That the Control of Disease is of Greater Economic Importance than the Breeding of High-producing Strains of Stock." Won by Waimana, who took the negative.

Taneatua (Secretary, W. Garlick, Taneatua).—Discussion on Centennial tree-planting scheme.

Waimana (Secretary, D. F. Woolfield, Waimana, Bay of Plenty).—Discussion Centennial tree-planting scheme; address by Mr. F. Reynolds on his "Trip Abroad" and "The Coronation."

Western Bay of Plenty.

(District Secretary, A. V. Allo, Department of Agriculture, Tauranga).

Katikati (Secretary, T. J. Pamment, Katikati, Bay of Plenty).—Final arrangements for club ball; lecture on "Recruiting" by the advisory president, Mr. H. Capamagian. At the previous meeting R. Walford and B. Wright gave accounts of the Bay of Plenty Y.F.C. tour of North Auckland. A ping-pong tournament was held, I. B. Sutton being the winner and G. B. Walford runner-up.

Omokoroa (Secretary, H. Emeny, Omokoroa, Bay of Plenty).

Paengaroa (Secretary, Cliff W. Riddell, Oto, R.D., Te Puke).—Arrangements to entertain North Auckland Y.F.C. touring party. Presentation made by Mr. D. S. Ross (chairman of the Auckland Council) to Mr. E. Blackmore, of Paengaroa Club, for the work he had done to assist the Y.F.C. movement. Addresses on "Home Defence" by Captain Yeoman and Lieutenant Santon, of Taneatua. At the previous meeting an address on "Life-saving" was given by Mr. Porter.

Tauranga (Secretary, A. J. Voss, Tauranga, R.D.).

Te Puke (Secretary, J. Phare, Te Puke, Bay of Plenty).—Club to enter a team in the seven-a-side football tournament. Discussion on Centennial tree-planting scheme. Lecture by Mr. A. V. Allo, Department of Agriculture, on "Lucerne"; the speaker dealt fully with the preparation of the ground, inoculation of seed, sowing, manuring, and general care of a lucerne stand.

Waihi (Secretary, A. W. Blackmore, Old Tauranga Road, Waihi).

Rotorua.

(District Secretary, C. S. Dalgleish, Department of Agriculture, Rotorua).

Horo Horo (Secretary, T. D. Kingi, Atiamuri Road, R.D., Rotorua).—Report on club tour of the East Coast, under leadership of Sir A. T. Ngata.

Putaruru (Secretary, N. Farelly, Putaruru).

Rotorua-Ngongataha (Secretary, E. W. Hunt, Malfroy Road, Rotorua).

Waikato.

(District Secretary, J. F. Shepherd, Department of Agriculture, Hamilton).

Cambridge (Secretary, Eric Anderson, Hautapu, Cambridge.

Huntly West (Secretary, J. W. Furniss, Ruawaro, Huntly).

Kakepuku (Secretary, E. F. Hopping, Te Kawa, Waikato).

Matamata (Secretary, S. K. Duxfield, Station Road, Matamata).

Matangi (Secretary, C. McKendry, Newstead R.D., Waikato).—Annual meeting; officers elected—Advisory president, Dr. H. E. Annett; club chairman, P. Mead; secretary and treasurer, C. McKendry.

Tauhei (Secretary, H. K. Williams, Tauhei, Morrinsville).—Opening address by Mr. Tavener, an advisory member. Talk on "Club Rules" by Mr. W. T. Osborne, advisory president.

Tahuna (Secretary, E. R. Elliott, Hoe-o-tainui, R.D., Ohinewai).

Te Aroha (Secretary, J. P. Hunt, Box 58, Te Aroha).

Te Awamutu (Secretary, H. C. Wynyard, Box 53, Te Awamutu).—Field day to be held. Address by Mr A. J. Sinclair on "How to Conduct a Meeting."

Te Kowhai (Secretary, C. H. Weedon, Horotiu, Waikato).

Auckland.

(District Secretary, J. E. Bell, Department of Agriculture, Auckland).

Clevedon (Secretary, W. Driver, Clevedon, Pukekohe).—Election of social committee. Lecture on "Diseases of Stock" by Mr. H. W. Carbury, Government Veterinarian. At the previous meeting a lecture on "Citrus Fruits" was given by Dr. W. S. Hill, of Otahuhu Technical High School, and an address by Mr. A. D. Bell, of Clevedon, on "How to Conduct a Meeting."

Franklin (Secretary, R. W. Franke, Karaka, Runciman).

Harrisville (Secretary, S. K. Alexander, Tuakau).—Election of advisory members; arrangements for field day and card party. General discussion on "Qualities in Hay and Ensilage," all members present taking part. A field day was held on Mr. J. Armstrong's property, Tuakau. Mr. C. Hawke, Pukekohe East, demonstrated on "Bacon Type in Pigs." A judging competition on pigs was held during the field day. There was total attendance of 54.

Mangatawhiri (Secretary, G. Quick, c/o Mr. C. Peach, Maramarua).

Mauku (Secretary, A. Goossman, Mauku, Pukekohe).

Warkworth.

(District Secretary, P. S. Syme, Department of Agriculture, Warkworth).

Port Albert (Secretary, J. Shepherd, Port Albert, R.D., Wellsford).

Wellsford (Secretary, J. H. Beecher, Wellsford).

Whangarei.

(District Secretary, E. B. Glanville, Department of Agriculture, Whangarei).

Keri Keri (Secretary, D. R. Bowden, c/o Mr. H. S. Benner, Keri Keri Central, North Auckland).

Matarau (Secretary, W. A. Rushbrook, Matarau Road, R.D., Whangarei).—Business meeting, report on dance held to entertain visiting Bay of Plenty members and allocation of profits. Discussion on Auckland Council meeting.

Maungakaramea. (Secretary, R. Porter, Maungakaramea, North Auckland).

Maungatapere (Secretary, G. Symons, Maunu, North Auckland).—Election of advisory members and committee. Address on "How to Conduct a Meeting" by Mr. A. T. Brainsley, Whangarei.

Dargaville.

(District Secretary, E. H. Arnold, Department of Agriculture, Dargaville).

Arapohue (Secretary, J. T. Studholme, Mititai, Dargaville).—Address by Mr. R. Gibson, solicitor, on "Farm Laws." The speaker dealt with (1) the Trespassing of Stock Act, etc.; (2) fencing laws; (3) land (titles, fixtures—selling of land). Many questions on other points of interest were answered.

Marohemo (Secretary, L. Maras, R.D., Maungaturoto Railway, North Auckland).—Lecture by Mr. A. Ariel on "The Management of Run Cattle." A field day was held at Marohemo, taking the form of a demonstration on mole-draining by Mr. H. Woodyear Smith.

Ruawai (Secretary, E. Barnes Walker, Parahi, Matakohe, North Auckland).—Addresses by Messrs. T. E. Walton and W. Craven on "The Ruawai Flats as They were Thirty Years Ago."

Tangiteroria (Secretary, J. H. Boyes, Kirikopuni, North Auckland).—Discussion re Auckland Council meeting. Lecture by Mr. B. Coleman, of Tangowahine, on "Common Sheep in New Zealand."

Kaitaia.

(District Secretary, A. M. Lee, Department of Agriculture, Whangarei).

Broadwood (Secretary, D. Hawkins, R.D., Kokukoku, North Auckland).—Discussion re Auckland Council meeting. Lecture by Mr. A. M. Lee, Department of Agriculture, on "Top-dressing." At the previous meeting Mr. Lee gave an address on "How to Conduct a Meeting."

Kaeo (Secretary, W. D. McGee, Box 44, Kaeo, North Auckland).

Kaitaia (Secretary, T. W. Flinn, c/o Mr. R. D. Hanlon, Kaitaia).

Oruru (Secretary, H. Frew, R.D., Kaitaia).

Umawera (Secretary, B. Gray, R.D., Okaihau, North Auckland).

Health Notes for the Farm

Contributed by the Department of Health

Give Your Child A Healthy Start In Life

"The bridge thou seest, said he (the genius) is human life; consider it attentively. Upon a more leisurely survey of it I found that it consisted of three score and ten entire arches, with several broken arches which added to those that were entire made up the number about an hundred. . . . But tell me further, said he, what thou discoverest on it. I see multitudes of people passing over it, said I, and a black cloud hanging on each end of it. As I looked more attentively, I saw several of the passengers dropping through the bridge, into the great tide that flowed underneath it; and upon further examination, perceived that there were innumerable trap-doors that lay concealed in the bridge, which the passengers no sooner trod upon but they fell through them into the tide and immediately disappeared. These hidden pitfalls were set very thick at the entrance of the bridge, so that throngs of people no sooner broke through the cloud, but many of them fell into them. They grew thinner towards the middle but multiplied and lay closer together towards the end of the arches that were entire."

JOSEPH ADDISON, *"The Vision of Mirzah."*

A YOUNG child starting out on the journey of life has many dangers to confront, and not the least of these is the danger of disease. In this article the first duty of medicine, which is not to cure disease but to prevent it, is discussed. Premature disease, we know, is largely preventable, and it is in the field of prevention that the great triumphs of modern medicine have been achieved.

Birth is not the point at which we begin to live. On the health of the mother depends the health of her child. Fortunate indeed is the young child who, in infancy, has had a wise mother who availed herself of the excellent facilities offered through our many child welfare centres, nursing associations, and extensive medical service to obtain a sound knowledge of all that pertains to the health of her babe, and herself, and so give her child a good start in the journey across the bridge of life and ensure her own good health.

Motherhood

By a systematic supervision beginning during the ante-natal period and continuing throughout infancy and childhood there will be a continuous record of the child's health and development. On the subject of the health of the young child, the late Sir Truby King once said:

"As to the relative importance of the various factors militating against the child, I think that we must all agree that before anything else stands unpreparedness for motherhood."

However, not only are we concerned with the production of a perfect child, but also to provide him a wholesome environment in those early years which make up the critical period of growth and development.

Whatever qualities a child inherits may be modified either to advantage or disadvantage. It is parents who make his environment to a large extent and who most powerfully influence his destiny, for the growing child is at the critical age psychologically as well as physically. The home is the workshop in which the character and personality are moulded by the formation of habits. It is necessary, therefore, to provide for the whole period of childhood those conditions which are most favourable to perfect development of mind and body.

Fundamental Requirements

Such fundamental requirements are sunshine and fresh air, food and water, warmth and protection, sleep and rest, and freedom and exercise. A

happy simile, and one of the common lessons of every-day experience, is that of a plant which grows strong and vigorous and produces a wealth of bloom and fruit when the soil, water, and sunshine are adapted to its requirements. When the conditions are unfavourable it will grow spindly and weak and produce few or stunted blossoms and fruit.

Now will be considered some of these fundamental requirements for development of healthy children.

It is agreed that a young child encounters the earliest and most of the greatest dangers of his life within the four walls of his home. That the house, therefore, should be sanitary within, provided with ample air space and a convenient supply of water, that its immediate surroundings should be sanitary and without refuse heaps, and that the food coming into the house should be clean—these are essentials of healthy infancy. After all, children cannot but accept the parental environment, and if the standard of this is raised the average of infant health will be correspondingly improved.

A Healthy Home

Modern housing, up-to-date drainage, and so forth will do all that is needed. If a mother is enlightened she can turn these advantages to her children's benefit, but she can also fail to make the best use of them and, worse still, she can neglect them until they actually grow a danger to her children's health. A dirty, ill-ventilated living-room, personal uncleanliness, improper food, and feeding utensils exposed to domestic contamination can soon destroy the health of a child even in a well-constructed home. The mother is a mighty influence for good or otherwise.

There is a story of a Chicago doctor who comes in at the end of a day's work, worn out, and saying, "I have had a terrible day." "What," says his sympathetic friend, "have you had a lot of desperate cases?" "Oh, not at all," was the reply, "but I am not a strong man, and these tenement windows take a deal of opening."

Preventable Defects

The beginning of school each year brings to light by medical examination a new group of children with preventable defects—bad teeth, poor vision, adenoids, dangerous tonsils—handicaps to their education and growth. Evidence of this appears annually in the reports of the Department's school medical officers. Much of this should be prevented by wise nurture and by

Correct Height and Weight for Age

The following tables show approximately what should be the height and weight for the ages 5 to 16 years:—

WEIGHT IN POUNDS FOR BOYS.

Height in Inches.	Age in Years. 5	6	7	8	9	10	11	12	13	14	15	16
39	36	..	..	..	..	..	..	..	..	..	..	..
40	38	38	..	..	..	..	..	..	..	..	..	..
41	38	39	..	..	..	..	..	..	..	..	..	..
42	39	40	41	..	..	..	..	..	..	..	..	..
43	41	42	43	44	..	..	..	..	..	..	..	..
44	42	44	44	45	..	..	..	..	..	..	..	..
45	44	46	46	47	49	..	..	..	..	..	..	..
46	46	48	48	48	50	..	..	..	..	..	..	..
47	..	50	50	51	51	52	..	..	..	..	..	..
48	..	52	52	53	54	54	55	..	..	..	..	..
49	..	..	55	55	56	56	58	..	..	..	..	..
50	..	..	57	57	58	59	60	62	..	..	..	..
51	..	..	59	60	61	62	63	64	66	..	..	..
52	..	..	..	63	63	64	65	66	67	..	..	..
53	..	..	..	65	66	67	68	69	70	72	..	..
54	..	..	..	..	69	70	71	72	73	74	..	..
55	..	..	..	..	71	73	74	75	76	77	80	..
56	..	..	..	..	..	76	77	77	78	79	81	..
57	..	..	..	..	..	79	80	81	82	83	84	..
58	..	..	..	..	..	..	83	84	85	86	87	88
59	..	..	..	..	..	..	87	88	89	90	92	93
60	..	..	..	..	..	..	..	93	94	95	96	97
61	..	..	..	..	..	..	..	95	98	99	100	102
62	..	..	..	..	..	..	..	99	101	103	104	105
63	..	..	..	..	..	..	..	..	106	108	109	110
64	..	..	..	..	..	..	..	..	113	114	115	116
65	..	..	..	..	..	..	..	..	..	118	120	121
66	..	..	..	..	..	..	..	..	..	121	125	126
67	..	..	..	..	..	..	..	..	..	127	129	130
68	..	..	..	..	..	..	..	..	..	..	134	135
69	..	..	..	..	..	..	..	..	..	..	137	138
70	..	..	..	..	..	..	..	..	..	..	142	143

WEIGHT IN POUNDS FOR GIRLS.

Height in Inches.	Age in Years. 5	6	7	8	9	10	11	12	13	14	15	16
39	34	..	..	..	..	..	..	..	..	..	..	..
40	35	37	..	..	..	..	..	..	..	..	..	..
41	37	38	39	..	..	..	..	..	..	..	..	..
42	39	40	40	..	..	..	..	..	..	..	..	..
43	41	42	42	42	..	..	..	..	..	..	..	..
44	42	44	44	44	..	..	..	..	..	..	..	..
45	44	46	46	46	47	..	..	..	..	..	..	..
46	46	46	47	47	48	48	49	..	..	..	..	..
47	..	49	49	50	50	51	..	..	..	..	..	..
48	..	51	52	52	52	53	54	..	..	..	..	..
49	..	54	54	54	55	55	56	..	..	..	..	..
50	..	..	57	57	57	58	59	60	..	..	..	..
51	..	..	58	59	59	60	61	62	..	..	..	..
52	..	..	..	62	62	63	64	65	66	..	..	..
53	..	..	..	64	66	67	67	68	71	..	..	..
54	..	..	..	66	69	69	70	71	72	75	..	..
55	..	..	..	..	73	73	73	74	75	78	..	..
56	..	..	..	..	75	76	77	77	79	79	..	..
57	..	..	..	..	..	78	80	80	82	85	88	..
58	..	..	..	..	..	81	84	85	86	90	91	95
59	..	..	..	..	..	..	89	90	92	94	97	100
60	..	..	..	..	..	..	91	93	96	98	101	102
61	..	..	..	..	..	..	..	95	100	102	106	107
62	..	..	..	..	..	..	..	101	102	106	108	110
63	..	..	..	..	..	..	..	..	108	110	112	114
64	..	..	..	..	..	..	..	..	112	114	118	119
65	..	..	..	..	..	..	..	..	..	118	120	123
66	..	..	..	..	..	..	..	..	..	122	123	126
67	..	..	..	..	..	..	..	..	..	..	126	128
68	..	..	..	..	..	..	..	..	..	..	130	132

MEASUREMENTS SHOULD BE TAKEN IN SCHOOL CLOTHES AND WITHOUT BOOTS.

A child that is well nourished should be the correct weight for age by these tables. In addition, such a child has a good colour, is clear-skinned, active, alert and firm-muscled. Health cannot be measured by weight alone.

DO YOU KNOW . . .

(1.) How to calculate your correct weight by these tables?

Take your height in inches, find this number in the first column of the chart under "Height in Inches; follow the line across the chart to the proper age column. The figure so found is **about** what you should weigh in pounds.

(2.) What to do if you are underweight?

(a) Take more rest. Go to bed an hour earlier; try to have 10 minutes' rest before each meal..

(b) Don't over-exercise; be moderate about play and games, especially strenuous activities like swimming and tennis.

(c) Eat fattening foods; plenty of milk, cream, butter and eggs are needful. Cod-liver oil with or without malt is useful. A bottle of milk can be taken to school.

(d) Make sure that you get sufficient fresh air and sunshine.

having defects corrected before the school life begins.

At six years of age the child's skull is as large round as a grown person's, and the brain weighs almost as much as an adult's brain. The parents should realise that when brain and body are growing so rapidly the little child is more easily affected by nervous strain. The wise parents avoid shocks and excessive excitement to their children, and are more patient with upsets.

The way a child sits, walks, runs, stands still, and lies in bed are important matters. They determine largely whether that far-away adult the mother sometimes dreams of is going to be straight and graceful in form without the slightest bone or posture defect.

Open-Air Life

A child's home may be in one room or ten rooms. It may be in the country, in a crowded city, in a city flat with a roof for a playground, or in a small city house with a tiny back yard. Wherever it is, most necessary things are fresh air and sunshine. There can be no more far-reaching, beneficial method of improving the health of the people as a whole than the wider practice of the open-air life.

One of the most valuable services a mother renders to her little child is teaching him those ideals of personal cleanliness upon which health and self-respect are built. A child who learns to love a clean body, clean hands, teeth, nose, and mouth can never altogether forgo them as he grows to manhood.

If a child appears to have any trouble at all with his eyes they should have immediate care. Plenty of sleep is an absolute necessity for a child, and his clothing should be simple, light, warm, and loose. The legs and thighs should be adequately covered in cold weather. A younger child will require more and warmer clothing than an older child who plays vigorously. His shoes should fit his feet.

Meals

Regarding meals, at this age a child is rapidly growing, and needs adequate nourishment. The body must not be deprived of the necessary supplies, either by ill-balanced diet or by mismanagement at the meals. The following foods should form the basis of the daily diet:—Vegetables, fruit, milk, and butter, bread, potatoes, eggs, fish, a small quantity of meat, and a daily teaspoonful of cod-liver oil unless otherwise medically advised. The provision of adequate drinking water is a necessity for all children. Have definite and punctual meal times.

The young child's waking hours, save such as are necessary for eating and care of the body, should be spent in natural and healthy play to the greatest extent. Play with other children helps the child to venture out of the protected life of the home and meet a larger social group. Hence the value of kindergarten schools for the pre-school child and, particularly so, the only child. An excellent companion and educator for a child is a child.

Experience shows that many of the defects of school children have their origin during the first six years of life. How important, therefore, is it for parents to train their little children in the laws of health by bringing them up to love cleanliness, sunlight, and fresh air, and by seeing that they are properly clothed and receive proper food and adequate rest, and live in clean houses. The things which we have learned in our childhood "grow up with our souls and unite themselves to it."

A NEW ROAD AND RAIL SERVICE

Bulk Travel Vouchers

A new form of annual season ticket is the bulk travel voucher which entitles the purchaser to receive tickets, without further charge, for Railways Road Motor Services (with minor exceptions) and first-class travel by rail, at the following rates:—

For 2,000 miles - -	£13 15 0
For 3,000 miles - -	£19 10 0
For 4,000 miles - -	£24 0 0
For every additional 1,000 miles beyond 4,000 miles -	£4 12 0

Application for a bulk travel voucher must be lodged with any District Manager or Stationmaster or road motor depot at least seven days before the voucher is required. For a fee of 16/6 a bulk travel voucher may be transferred for business purposes. The number of such transfers must not exceed twelve during the currency of the voucher.

For Road and Rail

Subterranean Clover.

During the past two years several subterranean clover strain trials have been laid down in various parts of the Ashburton County. In each trial the superiority of Tallarook over Mt. Barker or Dwalganup has been most marked. Although commencing growth a little later in the spring, the first-named variety, for production of green herbage, has easily outyielded either of the other two strains. In addition Tallarook has proved itself a more prolific seeder, thus ensuring a better cover of clover during the following season. The growth of Tallarook is also prolonged further into the summer, this being an important point in its favour in this district. Dwalganup is totally unsuited to Mid-Canterbury conditions. It is a poor leaf producer and a very shy seeder.

The Farm Home and Kitchen

Contributed by the Association for Country Education

Amusing Games for the Wintry Evening by the Fire

LONG winter evenings seem to make a special appeal to our hospitality, or maybe we like to make that an excuse for satisfying our yearning for "fun." Golf and badminton, bridge, and its dozen-and-one card-game companions are all right as far as they go, but for sheer enjoyment for ourselves and our friends there is nothing quite so jolly as a good old-fashioned evening of "games round the fireside."

"What and how to play" is the only problem, and it is with the object of solving it for our readers that the following games are suggested. Most of them require little or no equipment, and all of them are real fun-makers.

For those times when you want to make merry with a party of neighbouring friends one or two "Introduction Games"—or "Icebreakers," as we sometimes call them—will help to "set the ball rolling" right from the beginning. Here are two jolly samples:—

Hidden Talents

Very often there are talented folk among your family and friends who could entertain the others if only one knew how to start them off. Here is one way:—

With a knitting needle, punch holes in a cardboard square, and into each hole push a rolled slip of paper on which has been written a "stunt." (In writing these "stunts" the hostess must have in mind the talents of her group).

Have each member of the party pull out one slip, on which he reads how he is to perform. Allow five minutes for "exchanging ta'ents," and then "ring up the curtain" !

Animal Vegetable

Prepare, beforehand, slips of paper on each of which is written the name of some object in the animal or vegetable kingdom. (There should be three or four times as many slips of paper as there are guests.)

"It's one thing to have a party, but it's quite another to know what to do with it once you have it ! "

Pin one slip of paper on the back of each guest and instruct him (or her) to find out who or what he is. This must be done by asking such questions of his fellows as, "Am I animal?" "Have I leaves?" "Do I jump?"—and so on. Answers to all questions must be only "Yes" or "No."

As soon as a guest discovers his identity he is supplied with another slip.

Self-Advertisement

On arrival, each guest is given an advertisement which has been clipped from a magazine or newspaper, but from which the name of the article advertised has been carefully cut off. Players must then go about listing the names of as many "ads." as they can guess, together with the name of the person on whom each "ad." was pinned.

Pencil and Paper Games.

When your room is small, or when there are a number of "oldsters" in the group, "pencil or paper" games are always popular. Try these:—

Telegrams

Each player is supplied with a paper and pencil, and is given five minutes in which to write a telegram, using the letters of some selected word. (Each word in the telegram must begin with one letter of the key word announced.) At the end of the time limit the telegrams are read aloud, and vote taken on the best one.

Missing Adjectives

For this game one member of the group writes a "story," leaving blank spaces for adjectives before all nouns in the story.

For example: "Once upon a ..... time there lived a ..... man in a ..... town," etc.

Be Original

One of the jolliest kinds of invitations for the informal party is an original one composed by yourself. For instance why not something like this:—

"On Tuesday night at half-past eight
We hope you'll be at our front gate
For a party gay
Will be under way
And we want YOU to come
And help us play."

Players in turn name any adjective of which they happen to think, and the author writes one in each space in her story. When all spaces are filled the completed story is read aloud.

Last Will and Testament

As a modern form of the old game of "Consequences" the writing of his "last will and testament" will provide fun for every member of the family.

Provide each player with pencil and paper. At a given signal each writes at the top of his paper the words: "This is the last Will and Testament of ....." (signing his or her name).

Each player then folds over the paper so that the writing cannot be seen, and passes the sheet on to the one on his left. Players now write on the paper they have just received the names of their three most valuable possessions, then fold over and pass on the paper as before.

Next is written the names of the three persons to whom the possessions are bequeathed. Papers are again passed on, and players write the use to which each of the bequests is to be put. Papers are again passed, unfolded, and read aloud. The resulting "wills" are most amusing.

Fortune Spin

For those who have a flair for fortune-telling this game of "Fortune Spin" will while away many weary minutes.

Armed with an empty lemonade bottle, the leader of the game arranges all his audience in a circle. Then, asking his bottle in a loud voice such questions as: "Who is the jolliest person in the room?" he spins it in the centre of the circle. The person to whom the bottle points as it stops spinning is, of course, the answer to the question.

Suggested questions are:—"Who wants to be married this year?" "Who stole a piece of cake today?" "Who has the longest tongue in the room?" "Whose will be the longest engagement?" "Who wears a ring?"—and so on.

Egg Balance

In every family there is usually one "jokester," and for him we offer this as another trick to add to his store:—

With a solemn face the joker innocently inquires of the group if any one of them can hold an egg in two fingers. When one of them proudly admits that he can, he is asked to stand facing a door, which is opened just far enough to allow him to thrust two fingers through the **hinged** side. An egg is placed between the victim's fingers, and the rest of the family go on with another game, leaving him there holding the egg and perfectly helpless until someone takes pity on him.

Competitive Games

Young folk always enjoy something active, and while relay games usually require a good deal of room, here's one that can be played in the ordinary-sized farm living-room.

Pop-the-Bag

Divide the family group into two teams lined up opposite to and as far as possible from the following objects placed side by side:—A waste paper basket, a chair, a pile of paper bags.

At the word "go" the team leaders run to their respective chairs, sit down, pick up a bag from the pile, blow it up, "pop" it, throw it into the basket, and run back to tag the next player.

Dark Horse

Few farm families can resist a horse show, and for sheer fun for everyone, from grandfather downwards, this one is hard to beat:—

Supply each "exhibitor" with a pencil and paper. Switch off the lights.

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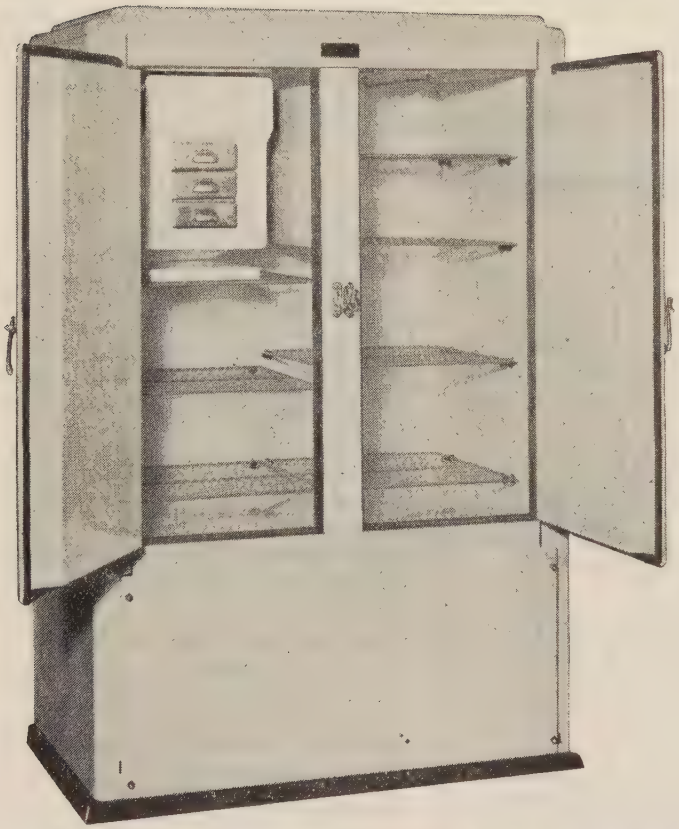

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and then announce that everyone is to draw a horse on his paper. Then, still in darkness, each must put a rider on his horse, draw a feed box for his mount, and finally print "OATS" on the box. Then the lights are turned on, and the amazing animals entered in the "horse show" are revealed.

Tasty Dishes for a Party Supper

SANDWICH FILLINGS.

Dates, Nuts, and Lemon Juice.—Stone dates and put into a saucepan with the juice of half a lemon, and heat gently, stirring well. Chop nuts (walnuts or roasted peanuts), and add to the dates, stir till soft and smooth, and then put in a small screw-top bottle, where it will keep well. (Note: Raisins may be chopped and used instead of dates. These sweet fillings are more valuable than jam.)

Tomato, Cheese, and Egg.—Put a little butter and some skinned and sliced tomatoes in a saucepan. Cook a few minutes, cool slightly, and then add two or three beaten eggs and half a pound of cheese, grated. Cook slowly as if it were scrambled eggs until it is thick. Bottle and use when needed. The mixture will keep for a week.

Home-made Peanut Butter.—Roast peanuts in a moderate oven. Shell and put through a mincer three times, then season and pack in jars. This should keep perfectly without sealing for four to six weeks.

SAVOURY BUTTERS.

Anchovy Butter.

Butter, ½ lb; anchovy fillets, ¼ lb; yolks of hard-boiled eggs, 3; lemon juice.

Cream the butter, pound the anchovy fillets, rub them through a sieve with the yolks of the eggs, mix all together until smooth, sprinkle with a few drops of lemon juice.

Parsley Butter.

Butter, ½ lb. Chopped parsley, 2 tablespoons.

Strip the parsley from the stalks and chop very finely. Work this into the creamed butter.

Ham Butter.

Minced ham, ¼ lb. Butter, ¼ lb. Yolks of hard-boiled eggs, 2. Pepper.

Cream the butter, rub the yolks through a sieve, beat the ham and egg into the butter, and season with pepper.

SAVOURIES SERVED ON TOOTHPICKS.

Cubes of vegetable aspic jelly served on lettuce leaves with a toothpick.

Cubes of jellied tomato juice (can), served with little salad dressing in tiny lettuce leaf (use a toothpick).

Ham Rolls.

Spread a little mustard on slices of boiled cold ham, cut into 1-8 in. thick slices. Place a teaspoon of baked beans on top of each slice. Roll, fasten with a toothpick. May be served cold or may be heated for 10 minutes in a moderate oven. Serve with parsley.

Pineapple and Bacon (hot).

Grilled or sauted cubes of pineapple. Grilled rolls of bacon which may be stuffed with a little olive if so desired. Attach two mixtures together by means of a toothpick. Garnish with sprig of parsley.

Pineapple and Ham (hot).

Rectangle of pineapple fairly thick. Spread lightly with a mixture of maple syrup, prepared mustard. Attach a slice or cube of ham to pineapple rectangle by means of a toothpick. Garnish with parsley.

Pineapple and Cheese Balls (cold).

Pineapple cubes. Grated cheese mixed with a little boiled salad dressing and formed into balls ¼ in. in diameter. Attach to pineapple cubes with toothpick. Garnish with tiny piece of cherry.

Cheese Olives.

Select large, stuffed olives. Cut each olive in half, and place together with a ball of seasoned moistened cream cheese.

Celery Sticks (Stuffed).

Clean celery. Scrape if necessary. Cut into 2½ in. lengths. Stuff with the following mixtures. Serve on paper "d'oyleys" with sprigs of parsley or on beds of crushed ice, silver dishes, etc.

(1) 2 stuffed olives, ½ cup tasty, grated cheese, 2 teaspoons onion juice, salad dressing to mix, salt, pepper, paprika. Add ingredients to grated cheese. Work to smooth paste. Fill celery stalks and chill.

(2) Creamed cheese.

(3) Cream cheese, chopped walnuts, and finely-chopped cherries (crystallised).

(4) Finely-grated pineapple, salad dressing, whipped cream, lemon juice. Garnish with piece of cherry or grated cheese.

(5) Celery stalks stuffed with creamed savoury minced meat. Sprinkle surface with butter crumbs. Place under griller to brown. Garnish with parsley.

(6) Celery stalks, par boil, flatten with blunt knife. Dip into egg, finely sifted dried breadcrumbs, grated cheese and fry in deep fat 385 deg. F. till golden brown. Serve on paper d'oyley and garnish with parsley.

Cheese and Bacon Savouries.

Cut bread ½-3-8 in. thick, cut off crusts. Spread with savoury mixture. Cut into fingers. Place on tray. Place slice of bacon on each finger, and bake for 15 minutes in moderate oven. Garnish with parsley. Savoury Mixture: Grated cheese, mixed to correct consistency with raw egg, dash of Worcester sauce, pepper, and salt.

APPLE CHUTNEY.

4lb apples.
2 large onions.
1lb brown sugar.
½lb sultanas.
¼lb preserved ginger.
1 teaspoon salt.
½ teaspoon mixed spice
3 cups vinegar.
½lb raisins.

If a hotter chutney is desired, add:—
½oz mustard.
½oz ground ginger.
½ teaspoon cayenne pepper.

Method.—As for autumn chutney, omitting the tomatoes.

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